

# Deactivation & Decommissioning Focus Area

Technical Response  
to FY2000 Site Needs



March 2000

Technologies in cover illustration (l to r): Hand-Held Shear (OST No. 2304), Personal Ice Cooling System (OST No. 1898), and Roto Peen with Captive Shot (OST No. 1812).  
Picture source: DDFA home page (<http://www.netl.doe.gov/dd/>).

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## **Executive Summary**

The Deactivation & Decommissioning Focus Area (DDFA) sees a significant opportunity for the development and widespread deployment of improved D&D technologies to reduce the life-cycle cost of cleanup. The DDFA's efforts are directed at reducing Environmental Management's (EM) overall life-cycle cost/mortgage for D&D of \$12.5 billion by 40%, to \$7.4 billion. The DDFA believes that EM's near-term (through FY2006) D&D mortgage of \$4.6 billion can be reduced by 25% for a net reduction of \$1.1 billion based on data from technology demonstrations. Further, investments in basic science are conservatively expected to yield average cost reductions of 50%, resulting in a \$4 billion cost/mortgage reduction for post-2006 D&D projects.

During the FY2000 Needs Technical Response process, EM site problem holders identified 179 distinct D&D technology and basic science needs and another 21 technology needs assigned to other focus areas within the EM Office of Science and Technology (OST) for which D&D solutions may apply. Forty-one (41) are ranked as high priority (Critical to Success), 117 are ranked as medium priority (providing Substantial Benefit), and the remaining 42 are ranked as low priority (providing Significant Benefit). Only 17 of 200 needs are classified as Science needs. The 200 DDFA tracked needs include 116 needs for Completion Sites (Richland, Savannah River, Idaho) and 84 needs for Closure Sites (Albuquerque, Chicago, Nevada, Ohio, Oakland, Oak Ridge, Rocky Flats).

As part of the Needs Technical Response process, the DDFA technical team conducted site visits and teleconferences with site-technology coordination groups to enhance the focus area understanding of individual need requirements and to discuss OST and non-OST technologies and ongoing research, development, and demonstration (RD&D) projects that may provide complete or partial solutions to each need. The need technical response process resulted in agreement between the site representatives and the DDFA on 158 distinct OST technologies and 120 distinct non-OST technologies as partial or complete solutions for over 80% (168 of the 200) of the DDFA tracked needs. Included were agreed-upon technology solutions to twenty (20) of twenty-one (21) non-DDFA needs.

The 158 OST technologies represent opportunities for multiple deployments to effect immediate reductions in cost, schedule, and risk for current EM D&D projects. Further, the 120 non-OST technologies represent opportunities for quick assessment and validation against baseline technologies within a large-scale demonstration and deployment project.

The 32 Needs without agreed-upon OST or non-OST technology solutions represent opportunities to initiate R&D activities ranging from basic science through engineering development. Fourteen (14) of these needs are Science needs, some of which are currently being addressed through the EM Science Program. Another 4 needs are considered to be functionally outside of the DDFA program area; the DDFA will coordinate with the proper focus area to develop solutions to these needs.

The DDFA plans to allocate R&D funds and to develop prioritized solutions using site-generated data; need priority and timing, cost savings, number and cost of impacted project baseline summaries, and technical risk of associated waste streams and Critical Closure Path milestones.

## The D&D Problem

During the course of nuclear weapons production, the U.S. Department of Energy (DOE) and its predecessor agencies constructed over 20,000 facilities (buildings, structures, tanks, etc.). Many of these facilities are contaminated with radioactive materials, hazardous chemicals, asbestos, and lead (including lead paint) and have exceeded their design life of 30–40 years since their construction in the 1940s and 1950s. With the end of the cold war, approximately 5000 of these facilities have completed their DOE mission and been identified as “surplus.” Of these, about 3314 directly supported the nuclear weapons production program, whereas the remaining surplus



**Figure 1. DOE Surplus Facilities, by Process Type**

facilities (approximately 1692) were associated with non-weapons operations and research. Figure 1 shows the distribution of DOE’s 3314 surplus weapons production facilities by process category (*Linking Legacies*; DOE/EM-0319, January 1997). Since these aging surplus facilities no longer serve a mission, DOE Environmental Management (EM) plans to deactivate and decommission (D&D) them in order to reduce the cost to monitor and maintain the facilities, decrease the potential for release of radioactive and hazardous materials to the environment and local communities, and decrease the risk of industrial safety accidents because of the continued deterioration of these facilities.

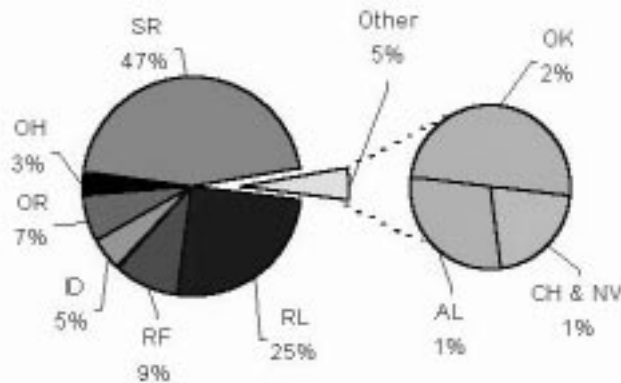
Based on the FY1999 *Accelerating Cleanup: Paths to Closure (ACPtC)* data available through the web-based Integrated Planning, Accountability, and Budgeting System – Information System (IPABS-IS; <https://ipabs-is.em.doe.gov/ipabs/Login.CFM>), the DOE EM mortgage for D&D services is estimated at a life-cycle cost of about \$12.5 billion. Nearly two-thirds of this D&D work will occur after FY2006. Figure 2 shows the D&D pre-FY2007 and post-FY2006 life-cycle costs for the major DOE sites.



**Figure 2. EM’s Estimated D&D Mortgage, by Site (\$ billion)**

The Completion Sites of Savannah River (SR), Richland (RL), and Idaho (ID) constitute 77% of the total DOE EM D&D mortgage (Figure 3). The Closure Sites of Oak Ridge (OR), Rocky Flats (RF), Albuquerque (AL), Ohio (OH), Nevada (NV), Chicago (CH), and Oakland (OK) comprise the remaining 23% of the current total DOE EM D&D mortgage. These EM estimates are considered lower-bounds as it appears that some EM costs have not yet been baselined owing to the uncertainty of end states or methodologies of cleanup. A detailed analysis of the D&D information in the ACPtC can be found in “The U.S. Department

## The D&D Problem



**Figure 3. Percentage of EM's Life-Cycle D&D Mortgage, by Site**

of Energy's Market for Deactivation and Decommissioning Services" presented at the American Nuclear Society's Second Topical Meeting and Exhibition on Decommissioning, Decontamination, and Reutilization held in Knoxville, Tennessee, during the week of September 13, 1999.

In addition to surplus facilities for which EM has responsibility to disposition, there are an estimated 10,000 buildings owned by DOE's Defense Programs (DP), Nuclear Energy (NE), and Energy Research (ER) Offices. In DOE's FY1997 Annual Report – notes to the

Financial Statement, DOE's Chief Financial Officer estimated the eventual cost to stabilize, deactivate, and decommission these facilities and structures to be about \$20.7 billion (<http://www.cfo.doe.gov/ficor/97constm/97notes.pdf>). Thus the total DOE mortgage for D&D services can be conservatively estimated in excess of \$33 billion.

Though the D&D *mortgage* appears daunting, the Deactivation & Decommissioning Focus Area (DDFA) sees a significant opportunity for the development and widespread deployment of improved D&D technologies to reduce the life-cycle cost of cleanup. The DDFA's efforts are directed at reducing the EM's overall life-cycle cost/mortgage for D&D of \$12.5 billion, as reported in the ACPtC site summary level data, by 40%, to \$7.4 billion. Based on validated cost reductions of 20%–40% for improved technologies demonstrated with the Large-Scale Demonstration and Deployment Projects (LSDDPs) and their subsequent deployments, the DDFA believes that EM's near-term (through FY2006) D&D mortgage of \$4.6 billion can be reduced by 25% for a net reduction of \$1.1 billion. Furthermore, based on results achieved by best-in-class R&D organizations, investments in basic science can be expected to result in returns-on-investment (ROI) of 20-100. Though investments in basic science tend to be high payoff, they are also high risk. Thus DDFA fully recognizes that some basic science endeavors will result in zero ROI. It is, therefore, not unreasonable to assume an average cost reduction of 50%, resulting in a \$4 billion cost/mortgage reduction for post-2006 D&D projects.

## The DDFA Program

To achieve the desired *mortgage* reductions, the DDFA manages a focus area-centered research, development, and demonstration (RD&D) program addressing D&D needs through basic science grants, applied R&D and engineering projects, and full-scale demonstration and deployment of improved and innovative D&D technologies and systems. The program is directly linked to EM's ACPTC plan activities. In addition to reducing costs, these improved technologies also promise to reduce risks and shorten D&D schedules. In some cases, these improved technologies provide the only solution for a particular D&D problem, i.e., an enabling technology.

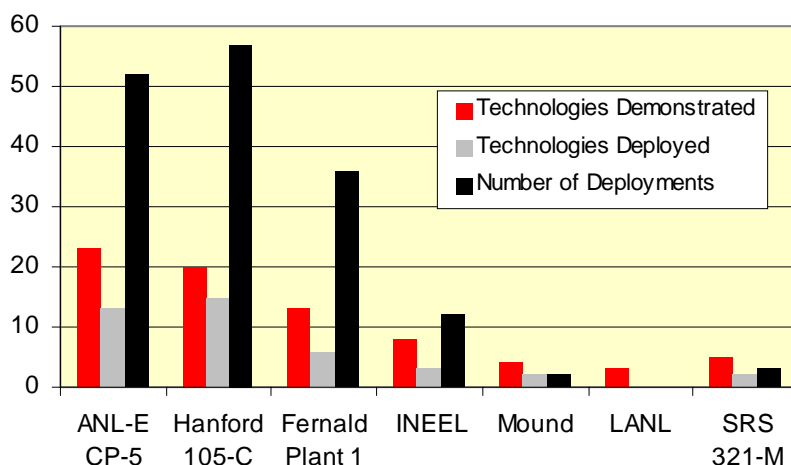
Since 1995, the centerpiece of the DDFA has been the LSDDPs to address near-term needs through the full-scale demonstration of improved and innovative technologies. The LSDDP strategy is to quickly access and demonstrate/validate the many commercially available D&D technologies worldwide, which are not currently being used within the EM complex. Each LSDDP is conducted within an existing D&D project alongside baseline technologies (and engineering practices). The goal is to achieve immediate reductions in D&D costs and risk by effecting rapid and multiple deployments after demonstration.

The LSDDP approach helps reduce the risk and liability for the DOE users associated with the first time use of a technology and promotes creative solutions that expand the D&D "tool box" beyond standard practices and technologies. These projects are managed by using an Integrating Contractor Team consisting of the site D&D contractor and several commercial D&D contractors who are willing and able to transfer the knowledge and expertise to other sites across the DOE Complex. The U.S. Army Corps of Engineers conducts independent cost and performance analysis of the demonstrated technologies versus the baseline technologies and documents these results in the Innovative Technology Summary Reports (ITSRs). Through these reports, technical performance and costs are effectively communicated to end-user decision makers and problem holders throughout the complex, thus facilitating replacement of baseline technologies with deployment of more cost-effective alternatives. Appendix G provides a list of DDFA developed and demonstrated technologies that have published ITSRs.

Through FY1999, the DDFA has supported seven LSDDPs which have produced a significant number of successes. Figure 4 displays the success statistics resulting from the LSDDPs supported by the DDFA. With the successful conclusion of the first three LSDDPs, 56 full-scale demonstrations of new or improved D&D technologies were completed. The four ongoing LSDDPs have collectively demonstrated 20 additional new or improved D&D technologies. Over 50% (41 of 76) of the demonstrated technologies have been subsequently deployed across the DOE weapons complex for a total of 162 times, and the number is growing. Detailed information on technologies demonstrated within the LSDDPs and deployed subsequent to full-scale demonstration can be found in the EM Office of Science and Technology's (OST) Technology Management System (TMS), located on the internet at <http://ost.em.doe.gov/tms/Home/Entry.asp?Show=Sites>. Detailed information on the seven past and current LSDDPs can be found on the internet at the DDFA home page (<http://www.netl.doe.gov/dd/>).



## The DDFA Program



**Figure 4. Success Statistics for the Large-Scale Demonstration and Deployment Program**

In addition to the LSDDPs, the DDFA supports a number of Accelerated Site Technology Deployment (ASTD) projects and two site-specific Initiatives (Canyon Disposition Initiative and Rocky Flats Initiative) designed to foster the deployment of improved D&D technologies. These projects provide an incentive to the DOE site end user programs, through cost sharing with OST, to actually deploy improved technologies.

In addition to the LSDDPs and ASTD projects, the DDFA supports applied research and development activities through the Crosscut Programs: Robotic Technology Development (RBX); Characterization, Monitoring, and Sensor Technologies (CMST); Efficient Separations and Processing (ESP); Industry and University Programs; and basic science research through the EM Science Program (EMSP).

The DDFA plans to continue its strategy of focusing on technology demonstrations and deployments to address near-term needs, while gradually transitioning its *investment portfolio* to address post-2006 cleanup needs. These new activities will include applied R&D through engineering of production prototypes performed within the Crosscutting Programs and will play off current basic research selected and funded within the EMSP.

All of this work will be fully integrated within the DDFA as depicted in the “technology pyramid” shown in Figure 5. Within the fully integrated DDFA program, a balanced portfolio of science and technology activities is planned. For a more detailed assessment of DDFA strategies and planned activities, refer to the DDFA Multiyear Program Plan for FY2000 through 2004.

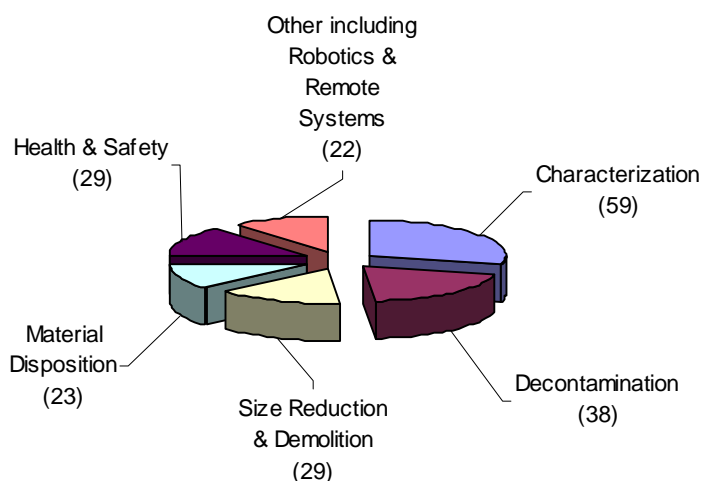
## The DDFA Program



**Figure 5. The DDFA's Integrated Approach to Technology Development and Deployment**

## Summary of FY2000 DDFA Needs Technical Response

During the FY2000 Needs Technical Response process, EM site problem holders identified 179<sup>1</sup> distinct D&D technology and basic science needs that must be satisfied in order to accomplish (i.e., enable) the baseline or to reduce the cost, schedule, and/or risk associated with the current technical baseline. In addition, the DDFA has identified another 21 technology needs assigned to the Mixed Waste, Tanks, and Nuclear Material Focus Areas (FA) and the Spent Nuclear Fuel National Program for which D&D solutions may apply. These 200 DDFA tracked needs can be grouped into distinct problem areas as shown in Figure 6.



**Figure 6. DDFA Tracked Needs by Problem Area**

Given the long-term mission of the DOE D&D program, these needs are not the full life-cycle set and will change over the next several years as the sites make progress toward their D&D cleanup goals and technical solutions are delivered for their early problem sets.

Appendix A presents the 200 FY2000 DDFA tracked needs, including the targeted FA, the ACPtC priority ranking, status as a science need

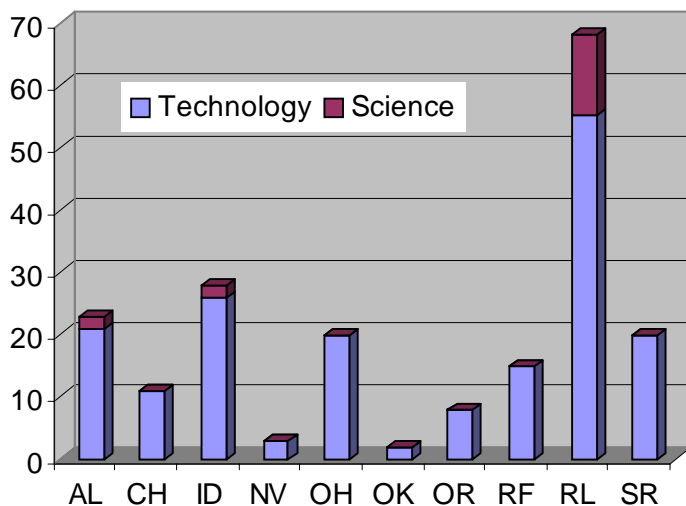
(Y/N), and earliest/latest date requirements for satisfying the need. All needs data can be viewed at the Needs Management System (NMS) web site (<http://em-needs.em.doe.gov/Entry.asp>). Appendix B lists the 70 PBSs that the needs impact plus the project cost (life cycle, pre-2007, post-2006) and project start/end dates. Also listed in Appendix B are 43 project baseline summaries (PBSs) that have no defined D&D needs, but which could benefit from D&D technologies developed and demonstrated to address identified site needs. All data were taken from the FY1999 Interim Data Management System (IDMS) which has been superseded by the IPABS-IS (<https://ipabs-is.em.doe.gov/ipabs/Login.CFM>).

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1. The DDFA has 185 assigned needs according to the FY2000 NMS. The six additional needs correspond to OR-DD01a and OR-DD01b, OR-DD02a and OR-DD02b, and OR-DD12a and OR-DD12b, which are duplicates of OR-DD01, OR-DD02, and OR-DD12, respectively. The a and b denote that the needs are specific to Paducah and Portsmouth, respectively.

## Summary of FY2000 DDFA Needs Technical Response

For the active needs identified by the sites and tracked by the DDFA, 41 are ranked as high priority (Critical to Success), 117 are ranked as medium priority (providing Substantial Benefit), and the remaining 42 are ranked as low priority (providing Significant Benefit). Only 17 of 200 needs are classified as Science needs, with AL, ID, and RL sites identifying 2, 2, and 13,



**Figure 7. Number of Science and Technology Needs for Sites**

respectively. The 200 DDFA tracked needs include 116 needs for Completion Sites (RL, SR, ID) and 84 needs for Closure Sites (AL, CH, NV, OH, OK, OR, RF). Approximately one-third of the 200 DDFA-tracked needs are at the Richland site, as shown by the distribution of needs in Figure 7.

As part of the Need Technical Response process, the DDFA technical team conducted site visits and teleconferences with site-technology coordination groups to enhance the FA understanding of individual need requirements and to discuss OST and non-OST technologies and ongoing RD&D projects that may

provide complete or partial solutions to each need. The need technical response process resulted in agreement between the site representatives and the DDFA on possible OST and/or non-OST technology solutions for 168 of the 200 needs (excluding duplicate OR needs). Twenty-two (22) needs had OST only solutions and 8 needs had non-OST only solutions. For the non-DDFA needs, 20 of 21 have agreed-upon technology solutions, while only 3 of 17 science needs have agreed-upon technology solutions.

A total of 158 distinct OST technologies and 120 distinct non-OST technologies were agreed to as partial or complete solutions for 1 or more of the 168 site needs. Thirty-six (36) of the OST technologies were selected as solutions to 10 or more needs each and another 43 OST technologies were selected as solutions to at least 5 needs each. Similarly, for the non-OST technologies, 27 were selected as solutions to 10 or more needs each and 32 were selected as solutions to at least 5 needs each. A complete listing of agreed-upon OST and non-OST technologies, including technology description, data source, technology provider, and point-of-contact data, are presented in Appendices E and F, respectively.

The 158 OST technologies represent opportunities for immediate and multiple deployments, as they represent enabling technologies or technologies with lower operating costs, higher production rates, and reduced risk to the operators/environment relative to the baseline. The 120 non-OST technologies represent opportunities for demonstration within an LSDDP. The DDFA

## Summary of FY2000 DDFA Needs Technical Response

recognizes that although many D&D operations can be accomplished with brute force using current technologies and engineering practices, many commercial technologies are available that can bring immediate reductions in cost, risk, and schedule. Consequently, the DDFA has reviewed and continues to extensively review the D&D experiences of the domestic and international nuclear power/weapons sectors for possible inclusion in the D&D “toolbox.”

The 32 needs without agreed-upon OST or non-OST technology solutions represent opportunities to initiate early-stage R&D (i.e., applied research or basic science) which would hopefully lead to technology solutions in the 4- to 6-year time frame. Fourteen (14) of these needs are Science needs, some of which are currently being addressed through the EMSP. Another 4 needs are considered to be functionally outside the DDFA program area; the DDFA will coordinate with the proper FA to develop solutions to these needs. Proposed RD&D efforts are described in the detailed technical response.

The needs that DDFA proposes to develop solutions for will be ranked using site-generated data (need priority and timing, cost savings, number and cost of impacted PBSs, technical risk of associated waste streams, and Critical Closure Path milestones) to assist in allocating RD&D program funds.

The Needs Technical Response data are available in the NMS and will be used as input to the Work Package Ranking Systems (WPRS). The WPRS is used by OST to establish an Integrated Priority List of work packages during the Corporate Review Budget process. The information developed for technical responses is provided in detail in the following section for each site need submitted in FY2000 and includes the following data elements:

- Technical Response ID
- Technical Response Title
- Narrative Response to Need
- Targeted Focus Area
- Need ID Number
- Need Title
- Technical Response Point of Contact (POC)
- Additional Comments
- OST Technologies (title, OST No.)
- Non-OST Technologies (title, data source) \*
- Similar Needs \*

\* Not entered into NMS.

## **Summary of FY2000 DDFA Needs Technical Response**

The Need/Work Package associations, as determined by the DDFA, are presented in Appendix D. For FY2002, the DDFA has developed budgets for 6 Work Packages that are associated with 1 of 4 Product Lines (PL): Reactor Facilities, Radionuclide Separation Facilities, Fuel & Weapon Components Fabrication Facilities, and Laboratory Facilities. The four PLs represent the major types of surplus facilities facing D&D and are consistent with facility types described in *Linking Legacies* (DOE/EM-0319, January 1997). The Product Lines and associated Work Packages are presented in Appendix C.

## **DDFA NEED TECHNICAL RESPONSES**

## DDFA Need Technical Responses

<b>Need ID Number</b>	AL-00-01-01-DD
<b>Need Title</b>	Size Reduction Technology for TRU Mixed Waste
<b>Narrative Response to Need</b>	A need for a technology to remotely handle and size reduce TRU mixed waste for packaging in WIPP approved standard waste boxes.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	None.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Decontamination and Volume Reduction System (DVRS)	2242
Dismantlement Processes Adaptation and Development	969
Dual Arm Work Platform Teleoperated Robotics System	1787
Laser Cutting and Size Reduction	1477
Mobile Robot Worksystem (ROSIE)	1799
Remote Control Concrete Demolition System	2100
Remote/Robotic Size Reduction System	2916
Rocky Flats D&D Initiative - Central Size Reduction Facility	2918
Track Mounted Shear/Crusher	2303

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
Dry Size Reduction System (DSRS)	FIU LSDDP TIS
Hydraulic Cutters/Shears	D&D Tech. Notebook
Integrated Characterization, Decontamination & Decommissioning Demonstration (ICD3)	FIU LSDDP TIS
Wachs Wheel Cutter	FIU LSDDP TIS



## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
CH-DD01-00	Reduced Emissions Metal Cutting
CH-DD06-99	Size Reduction of Massive Metal Structures
ID-7.2.12	Cutting Equipment for Large Items in Above Ground or Underground Structures & Underwater
ID-7.2.29	Remote Demolition of Machinery
ID-7.2.30	Remote Demolition of Metal Structures
ID-7.2.31	Remote Demolition of Piping
NV07-0001-03	Oversize TRU Waste Size Reduction
OH-F010	Safe and Efficient Process Piping and Conduit Dismantlement
OH-F027	Improved Equipment Dismantlement
OH-WV-909	Remote Handled Waste Processing
OH-WV-910	Size Reduction of Components
ORDD-07	Remote Dismantlement Methods
ORDD-09	Improved Non-Thermal Cutting of Process Equipment
RF-DD11	Improved Size Reduction of Contaminated Equipment and Demolition Waste
RL-DD02	Glove Box Size Reduction System for PFP
RL-DD030	Cutting Plutonium Contaminated Pipe for 233-S
RL-DD061	Remote/Robotic Systems for 233-S
RL-DD08	Remote Cutting Technologies for Building 324 and 327
RL-MW02	Remotely Controlled Size and Volume Reduction Techniques for RH MLLW and RH transuranic waste (TRUW)
SR00-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment
SR00-4001	Dismantlement of Large and/or Complex Equipment and Structures
SR00-4008	Dismantlement of Concrete-Encased Piping

## DDFA Need Technical Responses

<b>Need ID Number</b>	AL-00-01-02-DD
<b>Need Title</b>	Characterization Technologies for Verifying Presence or Absence of Contamination in Structures Scheduled for D&D
<b>Narrative Response to Need</b>	A characterization technology is needed that can verify the existence or absence of contamination in process piping, drain lines, wall cavities, and ventilation ducts. This technology should be able to measure contamination to unrestricted release levels with field-deployable, real-time, characterization and sampling equipment. At a minimum, the technology should concentrate on the small bore (approximately one inch in diameter) process and drain line pipes.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	None.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Associated Particle Imaging Development	413
Beryllium Swipe Monitor	2915
Decommissioning In-Situ Plutonium Inventory Monitor (DISPIM)	2241
Direct Reading Tritium Monitor	2310
Electret Ion Chambers	2315
Field Transportable Beta Spectrometer	1853
Gamma Cam (TM) Radiation Imaging System	1840
Gamma Ray Imaging System	1793
Ground Based Laser Induced Fluorescence Imaging	1999
In Situ Object Counting System	2098
Indoor Radiation Mapping Using Laser Assisted Ranging and Data System (LARADS)	1946
Lead Paint Analyzer	2317
Mobile Automated Characterization System	1798
Non-Intrusive Liquid Level Detection System	2403
Online Measurement of the Progress of Decontamination	2376

## DDFA Need Technical Responses

Passive Tritium Air and Surface Monitor	2957
PCB Analyzer	2398
Pipe Crawler Internal Piping Characterization System	1810
Piping Inspection	1811
Portable Scintillation Counter	2311
Portable Sensor for Hazardous Waste	31
Portable X-Ray Fluorescence Spectrometer	1790
Portable X-Ray, K-Edge Heavy Metal Detector	134
Real-Time Surface Tritium Monitor	2933
Solid State Pin Diode Direct Reading Surface Tritium Detector	2956
Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)	1942
Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)	97

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Aladin Gamma Camera	D&D Tech. Notebook
Amandin Surface Counter	D&D Tech. Notebook
Beta Contamination Detector with High Gamma Filtration/Rejection	FIU LSDDP TIS
FissTrack Plutonium Inventory Measurement System	D&D Tech. Notebook
Integrated Characterization, Decontamination & Decommissioning Demonstration (ICD3)	FIU LSDDP TIS
IonSens 208 Large Item Monitor	D&D Tech. Notebook
NOMAD Plus and MicroNOMAD Portable Spectroscopy Systems	FIU LSDDP TIS
Portable Survey Meters	D&D Tech. Notebook
Radiation Detectors	D&D Tech. Notebook
TRU Crate/Box Monitor	D&D Tech. Notebook
TRU Drum Monitor	D&D Tech. Notebook

## DDFA Need Technical Responses

TRU Piece Monitor	D&D Tech. Notebook
TRU-D 400 TRU Package Monitor	D&D Tech. Notebook
Uranium Drum Enrichment Monitor	D&D Tech. Notebook

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### **SIMILAR NEEDS**

<b>Site Need ID</b>	<b>Need Title</b>
CH-MW03-99	Lead Removal, Segregation and Disposal
ID-7.2.15	Field Screening of Paint/Painted Surfaces to Identify Contamination such as; PCB, Lead, and other RCRA Metals in the Paint
ID-7.2.16	Field Screening of Lead (shot, bricks, sheeting) for Radionuclide Contamination
ID-7.2.17	Field Screening of Samples and Equipment Surfaces to Identify PCB Contamination
NV09-0001-09	Non-intrusive Surveys in Pipes and Vessels
NV10-0001-10	Improved Detection and Characterization of Radioactive Contamination on Large Concrete and Metal Surfaces
OH-C901	Robotic Device to Improve Characterization of Underground Pipe Lines
OH-M901	Improved Facility Survey Techniques
ORDD-01	Improved Characterization of Equipment, Machinery, Fabricated Metals & Other Materials
ORDD-12	Improved Characterization of Buildings and Facilities
RF-DD01	Improved Pre-D&D Characterization for Distinguishing Between TRU and Low-Level Contamination
RF-DD02	High Speed Integrated Characterization System for (1) Radioactive, (2) Hazardous and (3) Toxic Contamination
RF-DD04	Improved Measurement Techniques for Free Release of Property and Salvageable Equipment Contaminated with Radionuclides
RF-DD15	Real-Time Beryllium Surface Characterization
RL-DD031	Non-Intrusive Detection of Pipe Contents for 233-S
RL-DD033	Field Screening for Hazardous Materials for 105-F and 105-DR Reactors

## **DDFA Need Technical Responses**

RL-DD036	General Radiation Surveys of Concrete and Equipment in the Materials Processing Facilities for CDI
RL-DD037	Liquids Detection for CDI
RL-DD038	Liquids Characterization for CDI
RL-DD039	Solids (Sediment/Sludge/Dust) Characterization for CDI
RL-DD040	Concrete Characterization for CDI
RL-DD064	Characterization of the 105-F Spent Fuel Basin
SR00-4002	Characterization of Contaminated Surfaces
SR00-4005	Characterization of Inaccessible Areas
SR00-4007	Characterization of Volumetrically Contaminated Surfaces

## DDFA Need Technical Responses

<b>Need ID Number</b>	AL-00-01-03-DD
<b>Need Title</b>	Containment and Confinement of Hazardous and Radioactively Contaminated Liquids Cost-Effectively; Containment of Airborne Contamination
<b>Narrative Response to Need</b>	A need for a technology to better contain and confine hazardous and radioactively contaminated liquids in a cost effective manner. This containment system should be able to provide true detection of the contaminants and absorb and neutralize them to render the containment structure non-hazardous for easy cleanup and disposal. A technology is also needed to more effectively contain airborne contamination when performing deactivation or decommissioning work inside a surplus facility.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	None.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Oil Solidification	2313

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
CD-1000 Concentrate Dryer System	D&D Tech. Notebook
Liquid waste treatment technologies	D&D Tech. Notebook
PETROSET II	FIU LSDDP TIS
Quik-Solid	D&D Tech. Notebook
Water Works SP-400 Superabsorbent	D&D Tech. Notebook

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### SIMILAR NEEDS

<b>Site Need ID</b>	<b>Need Title</b>
CH-MW07-99	Stabilization of Tritium Organic Waste
CH-SS01-00	Detritiation of Water
SR00-4013	Containment/Confinement Technologies

## DDFA Need Technical Responses

<b>Need ID Number</b>	AL-00-01-04-DD
<b>Need Title</b>	Fixation of Airborne and Removable Contamination
<b>Narrative Response to Need</b>	A need for a fixative to capture airborne and removable contamination and affix contamination on facility surfaces and within piping and vessels.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	None.

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### OST TECHNOLOGIES

Technology Title	Technology ID
ALARA 1146 Strippable Coating	2314
Reactor Surface Contamination Stabilization (Reactor Stabilizer)	1839

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Aerosol Fog System	FIU LSDDP TIS
Passive Aerosol Generator (PAG)	FIU LSDDP TIS
Polyurea Spray Elastomers	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
OH-M902	Decontamination Techniques for Tritiated Gloveboxes
OH-M903	Method for Controlling Off-Gassing and Removable Contamination from Tritium Piping
OH-M909	Automated Dust Suppression System
RF-DD03	Improved Interior Airborne Particulates Control
RF-DD17	Improved Dust Control Methods During Building Demolition for Structures that are not Free Releasable
RL-DD032	Contamination Fixative for 233-S
RL-DD04	TRU Waste Fixatives for PFP

## **DDFA Need Technical Responses**

RL-DD045	Fixatives for K3 Duct at WESF
RL-DD062	Method to Capture Airborne Alpha Contamination for 233-S
RL-DD07	Fixatives for Building 324 and 327
RL-SNF03	Fixatives for K-Basin
SR00-4012	Stabilization of Contaminated Equipment/Components/Surfaces



## DDFA Need Technical Responses

<b>Need ID Number</b>	AL-00-01-05-DD
<b>Need Title</b>	Alternative Cutting Techniques for Piping
<b>Narrative Response to Need</b>	A need for a cutting technology for various sizes of piping with internal dispersible and fixed plutonium contamination. The pipes are in congested areas that inhibit the use of glove bags for contamination control.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	None.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Diamond Wire Cutting Technology Assessment of Tokamak Fusion Rest Reactor Vacuum Vessel Surrogate	2389
Hand Held Shear	2304
High Speed Clamshell Pipe Cutter	1807
Laser Cutting and Size Reduction	1477
Mega-Tech Hydraulic Shears	2953
Oxy-Gasoline Torch	1847
Pipe Cutting and Crimping System	2955
Self Contained Pipe Cutting Shear	1948

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
Arc Saw	FIU LSDDP TIS
Hydraulic Cutters/Shears	D&D Tech. Notebook
Hydraulic Shears	FIU LSDDP TIS
Integrated Characterization, Decontamination & Decommissioning Demonstration (ICD3)	FIU LSDDP TIS
LUKAS Rescue Tools - Hydraulic Cutting Shears	D&D Tech. Notebook
Pipe Crimper	FIU LSDDP TIS
Wachs Wheel Cutter	FIU LSDDP TIS

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
CH-DD01-00	Reduced Emissions Metal Cutting
CH-DD06-99	Size Reduction of Massive Metal Structures
ID-7.2.12	Cutting Equipment for Large Items in Above Ground or Underground Structures & Underwater
OH-F010	Safe and Efficient Process Piping and Conduit Dismantlement
OH-F027	Improved Equipment Dismantlement
OH-WV-910	Size Reduction of Components
RF-DD11	Improved Size Reduction of Contaminated Equipment and Demolition Waste
RL-DD030	Cutting Plutonium Contaminated Pipe for 233-S
RL-DD08	Remote Cutting Technologies for Building 324 and 327
SR00-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment
SR00-4008	Dismantlement of Concrete-Encased Piping

## DDFA Need Technical Responses

<b>Need ID Number</b>	AL-00-01-06-DD
<b>Need Title</b>	Effective Decontamination of Concrete
<b>Narrative Response to Need</b>	A need for a more rapid, cost-effective, concrete decontamination technology. This technology should reduce the amount of secondary waste generated, decontaminate various concrete configurations, and decontaminate concrete surfaces in inaccessible areas. The technology should be capable of removing transuranics, actinides, fission products, and tritium from concrete surfaces.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	None.

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### OST TECHNOLOGIES

Technology Title	Technology ID
2-D Linear Motion System (Wall Walker)	1476
Biodegradation of Concrete	1421
Centrifugal Shot Blast System	1851
Concrete Grinder	2102
Concrete Shaver	1950
Concrete Spaller	2152
Decontamination Using Liquid Nitrogen Carrier with Solid Carbon Dioxide Pellet	1456
High Productivity Vacuum Blasting	2224
Integrated Vertical and Overhead Decontamination System	2378
Laser Surface Cleaning	32
Remotely Operated Scabbling	2099
Removal of Contaminants from Equipment and Debris, and Waste Minimization Using TECHXTRACT	1450
Robotic Vacuum - Deployed Wall Scabbler / Detector	2321
Rotary Peening with Captive Shot	1812
ROTO PEEN Scaler and VAC PAC System	1943
Soda Blasting Decontamination Process	369

## DDFA Need Technical Responses

### NON-OST TECHNOLOGIES

Technology Title	Data Source
Cavity Plus Decon System	D&D Tech. Notebook
CO2 Pellet Cleaning	D&D Tech. Notebook
En-Vac Robotic Climber	FIU LSDDP TIS
Horizontal Surface Shot Blaster (EBE 350)	D&D Tech. Notebook
Laser	FIU LSDDP TIS
Laser ZAWCAD	FIU LSDDP TIS
Milling	FIU LSDDP TIS
Mobile Decon Systems (super-heated water, abrasive blasting, or mechanical rotary systems)	D&D Tech. Notebook
RADCON LASER (ERASER)	FIU LSDDP TIS
Robotic Climber	FIU LSDDP TIS
Sivablast System	D&D Tech. Notebook - ANS Robotics/Remote Systems
Vertical Surface Shot Blaster (EBE 250 VHC)	D&D Tech. Notebook

### SIMILAR NEEDS

Site Need ID	Need Title
CH-DD07-99	Decontamination of Fixed Surface Contamination of Concrete (thin layer removal)
CH-DD08-99	Remote Decontamination of In-ground Concrete Structures
ID-7.2.03	Decontamination of Concrete Walls, Floors, Ceilings, and Corners
ORDD-03	Improved Decontamination of Facility Concrete and Painted Surfaces
ORDD-06	Improved Remote Decontamination Methods
ORDD-08	Mercury Removal from Metal and Porous Surfaces
RF-DD09	Improved Decontamination of Porous Surfaces in Preparation for Building Demolition

## **DDFA Need Technical Responses**

RL-DD06	Decontamination of Building 324 and 327
SR00-4004	Decontamination of Contaminated Concrete

## DDFA Need Technical Responses

<b>Need ID Number</b>	AL-00-01-07-DD
<b>Need Title</b>	Ex Situ Glove Box Size Reduction System
<b>Narrative Response to Need</b>	A need for an ex-situ glove box size reduction system, possibly housed in a skid-mounted, modular containment structure. The system would provide for size reduction, final decontamination, NDA, and packaging. The system should easily couple to a facility's support services, such as steam, water, air, and electricity. The system should also be applicable to other large items such as piping, ducting, and other metal objects.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	This need is being addressed through the LANL ASTD project for the Decontamination and Volume Reduction System.

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### OST TECHNOLOGIES

Technology Title	Technology ID
Decontamination and Volume Reduction System (DVRS)	2242
Dismantlement Processes Adaptation and Development	969
Dual Arm Work Platform Teleoperated Robotics System	1787
Laser Cutting and Size Reduction	1477
Mobile Robot Worksystem (ROSIE)	1799
Modular Manipulator for Robotics Applications	2199
Remote/Robotic Size Reduction System	2916
Rocky Flats D&D Initiative - Central Size Reduction Facility	2918
Size Reduction Machine	2395

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Dry Size Reduction System (DSRS)	FIU LSDDP TIS
Integrated Characterization, Decontamination & Decommissioning Demonstration (ICD3)	FIU LSDDP TIS

## DDFA Need Technical Responses

### SIMILAR NEEDS

Site Need ID	Need Title
CH-DD06-99	Size Reduction of Massive Metal Structures
ID-7.2.12	Cutting Equipment for Large Items in Above Ground or Underground Structures & Underwater
ID-7.2.29	Remote Demolition of Machinery
ID-7.2.30	Remote Demolition of Metal Structures
ID-7.2.31	Remote Demolition of Piping
NV07-0001-03	Oversize TRU Waste Size Reduction
OH-F010	Safe and Efficient Process Piping and Conduit Dismantlement
OH-F027	Improved Equipment Dismantlement
OH-WV-909	Remote Handled Waste Processing
OH-WV-910	Size Reduction of Components
ORDD-07	Remote Dismantlement Methods
ORDD-09	Improved Non-Thermal Cutting of Process Equipment
RF-DD11	Improved Size Reduction of Contaminated Equipment and Demolition Waste
RL-DD02	Glove Box Size Reduction System for PFP
RL-DD030	Cutting Plutonium Contaminated Pipe for 233-S
RL-DD061	Remote/Robotic Systems for 233-S
RL-DD08	Remote Cutting Technologies for Building 324 and 327
RL-MW02	Remotely Controlled Size and Volume Reduction Techniques for RH MLLW and RH transuranic waste (TRUW)
SR00-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment
SR00-4001	Dismantlement of Large and/or Complex Equipment and Structures

## DDFA Need Technical Responses

<b>Need ID Number</b>	AL-00-01-08-DD
<b>Need Title</b>	Segregation Technology to Separate TRU and Non-TRU and Low Level and Free Release Waste
<b>Narrative Response to Need</b>	A need for a system that segregates between transuranic and non-transuranic waste and between low level and free-release waste.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	None.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Associated Particle Imaging Development	413
Decommissioning In-Situ Plutonium Inventory Monitor (DISPIM)	2241
Field Transportable Beta Spectrometer	1853
In Situ Object Counting System	2098
Long Range Alpha Detection for Component Monitoring	2382
Mobile Characterization System for Large Crates	2959
Portable X-Ray Fluorescence Spectrometer	1790
Segmented Gate System	2158
Standard Waste Box Crate Counter	2917
Waste Inspection Tomography (WIT)	259

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
Beta Contamination Detector with High Gamma Filtration/Rejection	FIU LSDDP TIS
DrumScan Modular Segmented Gamma Scanner	D&D Tech. Notebook
IonSens Conveyor Monitor	D&D Tech. Notebook
IPAN/GEA (imaging passive-active neutron/gamma energy assay) Crate System	D&D Tech. Notebook
IPAN/GEA (imaging passive-active neutron/gamma energy assay) Drum System	D&D Tech. Notebook
Waste Assay Systems	D&D Tech. Notebook



## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
OH-WV-901	Characterization of Low Level and Transuranic Waste
OH-WV-909	Remote Handled Waste Processing
OK99-06	Mobile Non-Destructive Assay for TRU Waste Boxes
RF-DD04	Improved Measurement Techniques for Free Release of Property and Salvageable Equipment Contaminated with Radionuclides
RL-DD033	Field Screening for Hazardous Materials for 105-F and 105-DR Reactors
RL-DD035-S	Neutron Detection for Sorting Remote-Handled Radioactive Waste into TRU vs Non-TRU
RL-DD05	Characterization of Building 324 and 327
RL-DD060	Characterization for Waste Handling, Packaging and Processing for 233-S
RL-DD064	Characterization of the 105-F Spent Fuel Basin
RL-DD065	Backfill Removal and Segregation for the 105-F Spent Fuel Basin
RL-DD066	Material Removal and Segregation for the 105-F Spent Fuel Basin
SR00-4002	Characterization of Contaminated Surfaces
SR00-4011	Waste Characterization

## DDFA Need Technical Responses

<b>Need ID Number</b>	AL-00-01-09-DD
<b>Need Title</b>	Method for Decontaminating and Disposing of Tritium-Contaminated Pump Oil
<b>Narrative Response to Need</b>	A need for a technology for decontamination and disposal of tritium-contaminated pump oil.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	None.

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### OST TECHNOLOGIES

Technology Title	Technology ID
Oil Solidification	2313

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
PETROSET II	FIU LSDDP TIS

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### SIMILAR NEEDS

Site Need ID	Need Title
CH-MW07-99	Stabilization of Tritium Organic Waste
OH-M905	Treatment of Tritiated Pump Oils and Mercury

## DDFA Need Technical Responses

<b>Need ID Number</b>	AL-00-01-10-DD
<b>Need Title</b>	Accelerated 'Real Time' Volumetric Radioassay of Lead Forms
<b>Narrative Response to Need</b>	A need for a technology for an accelerated real time volumetric radioassay of lead forms, other than lead brick, to make cost effective (NO DOE RAD ADDED) determinations to allow free release for recycling lead to the scrap metal industry. The lead forms are sheet, plate, shot, wool, irregular shapes and etc.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	None.

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted.

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted.

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### SIMILAR NEEDS

Site Need ID	Need Title
CH-MW03-99	Lead Removal, Segregation and Disposal
ID-7.2.16	Field Screening of Lead (shot, bricks, sheeting) for Radionuclide Contamination

## DDFA Need Technical Responses

<b>Need ID Number</b>	AL-00-01-11-DD
<b>Need Title</b>	Increased Efficiency Waste Characterization Assay Methods
<b>Narrative Response to Need</b>	A need for a technology to improve waste characterization, to quickly assay materials within various containers in order to improve the overall efficiency of a D&D activity. This characterization technology should be able to determine assay values of materials within containers down to free-release limits.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	None.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Associated Particle Imaging Development	413
Decommissioning In-Situ Plutonium Inventory Monitor (DISPIM)	2241
Long Range Alpha Detection for Component Monitoring	2382
Mobile Characterization System for Large Crates	2959
Standard Waste Box Crate Counter	2917
Waste Inspection Tomography (WIT)	259

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
DrumScan Modular Segmented Gamma Scanner	D&D Tech. Notebook
IPAN/GEA (imaging passive-active neutron/gamma energy assay) Crate System	D&D Tech. Notebook
IPAN/GEA (imaging passive-active neutron/gamma energy assay) Drum System	D&D Tech. Notebook
Waste Assay Systems	D&D Tech. Notebook

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
OH-WV-901	Characterization of Low Level and Transuranic Waste
OH-WV-909	Remote Handled Waste Processing
OK99-06	Mobile Non-Destructive Assay for TRU Waste Boxes
RL-DD035-S	Neutron Detection for Sorting Remote-Handled Radioactive Waste into TRU vs Non-TRU
RL-DD05	Characterization of Building 324 and 327
RL-DD060	Characterization for Waste Handling, Packaging and Processing for 233-S
SR00-4011	Waste Characterization

## DDFA Need Technical Responses

<b>Need ID Number</b>	AL-00-01-12-DD
<b>Need Title</b>	Remote-Handled Size Reduction Technology
<b>Narrative Response to Need</b>	A need for a technology to remotely handle and size reduce large equipment mixed waste.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	The Savannah River Site LSDDP has addressed this need through demonstration of the Size Reduction Deployment Platform. Contact John Duda, DOE-NETL (304) 285-4217, or Cecil May, Westinghouse Savannah River (803) 725-5813.

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### OST TECHNOLOGIES

Technology Title	Technology ID
Decontamination and Volume Reduction System (DVRS)	2242
Diamond Wire Cutting Technology Assessment of Tokamak Fusion Rest Reactor Vacuum Vessel Surrogate	2389
Dismantlement Processes Adaptation and Development	969
Dual Arm Work Platform Teleoperated Robotics System	1787
Laser Cutting and Size Reduction	1477
Mega-Tech Hydraulic Shears	2953
Mobile Robot Worksystem (ROSIE)	1799
Pipe Cutting and Crimping System	2955
Remote Control Concrete Demolition System	2100
Remote/Robotic Size Reduction System	2916
Rocky Flats D&D Initiative - Central Size Reduction Facility	2918
Size Reduction Machine	2395
Track Mounted Shear/Crusher	2303

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Dry Size Reduction System (DSRS)	FIU LSDDP TIS
Hydraulic Cutters/Shears	D&D Tech. Notebook

## DDFA Need Technical Responses

Integrated Characterization, Decontamination & Decommissioning  
Demonstration (ICD3)

FIU LSDDP TIS

Wachs Wheel Cutter

FIU LSDDP TIS

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### **SIMILAR NEEDS**

<b>Site Need ID</b>	<b>Need Title</b>
CH-DD06-99	Size Reduction of Massive Metal Structures
ID-7.2.12	Cutting Equipment for Large Items in Above Ground or Underground Structures & Underwater
ID-7.2.29	Remote Demolition of Machinery
ID-7.2.30	Remote Demolition of Metal Structures
ID-7.2.31	Remote Demolition of Piping
NV07-0001-03	Oversize TRU Waste Size Reduction
OH-F010	Safe and Efficient Process Piping and Conduit Dismantlement
OH-F027	Improved Equipment Dismantlement
OH-WV-909	Remote Handled Waste Processing
OH-WV-910	Size Reduction of Components
ORDD-07	Remote Dismantlement Methods
ORDD-09	Improved Non-Thermal Cutting of Process Equipment
RF-DD11	Improved Size Reduction of Contaminated Equipment and Demolition Waste
RL-DD02	Glove Box Size Reduction System for PFP
RL-DD030	Cutting Plutonium Contaminated Pipe for 233-S
RL-DD061	Remote/Robotic Systems for 233-S
RL-DD08	Remote Cutting Technologies for Building 324 and 327
RL-MW02	Remotely Controlled Size and Volume Reduction Techniques for RH MLLW and RH transuranic waste (TRUW)
SR00-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment

## **DDFA Need Technical Responses**

SR00-4001	Dismantlement of Large and/or Complex Equipment and Structures
SR00-4008	Dismantlement of Concrete-Encased Piping



## DDFA Need Technical Responses

<b>Need ID Number</b>	AL-07-01-11-MW
<b>Need Title</b>	Waste Sorting and Characterization
<b>Narrative Response to Need</b>	A need for a technology to Sort, Survey and Decontaminate Mixed Waste.
<b>Focus Area</b>	MWFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	Through the DDFA Work Package DD-12 technologies are being developed, demonstrated and deployed for characterization, sorting and decontamination TRU waste. Specific projects include the LANL LSDDP and Rocky Flats ASTD projects. Systems developed and demonstrated within these projects may have applicability to mixed wastes and to this need.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Associated Particle Imaging Development	413
Decommissioning In-Situ Plutonium Inventory Monitor (DISPIM)	2241
Long Range Alpha Detection for Component Monitoring	2382
Mobile Characterization System for Large Crates	2959
Standard Waste Box Crate Counter	2917
Vehicle and Cargo Inspection System (VACIS)	2912
Waste Inspection Tomography (WIT)	259

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
DrumScan Modular Segmented Gamma Scanner	D&D Tech. Notebook
IonSens Conveyor Monitor	D&D Tech. Notebook
IPAN/GEA (imaging passive-active neutron/gamma energy assay) Crate System	D&D Tech. Notebook
IPAN/GEA (imaging passive-active neutron/gamma energy assay) Drum System	D&D Tech. Notebook
Waste Assay Systems	D&D Tech. Notebook

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
OH-WV-901	Characterization of Low Level and Transuranic Waste
OH-WV-909	Remote Handled Waste Processing
OK99-06	Mobile Non-Destructive Assay for TRU Waste Boxes
RL-DD035-S	Neutron Detection for Sorting Remote-Handled Radioactive Waste into TRU vs Non-TRU
RL-DD05	Characterization of Building 324 and 327
RL-DD060	Characterization for Waste Handling, Packaging and Processing for 233-S
SR00-4011	Waste Characterization

## DDFA Need Technical Responses

<b>Need ID Number</b>	AL-07-01-12-DD
<b>Need Title</b>	Decontaminate and Decommission Radioactively Contaminated Facilities
<b>Narrative Response to Need</b>	A need for improved technologies to decontaminate concrete and metal surfaces contaminated with plutonium and uranium. The contamination can be fixed or removable and can be found on walls, floors, equipment, and other bulk materials. These improved technologies should minimize primary and secondary waste.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	None.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
2-D Linear Motion System (Wall Walker)	1476
Biodegradation of Concrete	1421
Centrifugal Shot Blast System	1851
Concrete Grinder	2102
Concrete Shaver	1950
Concrete Spaller	2152
Ex-Situ Large Bore Pipe Decontamination and Characterization System	2375
High Productivity Vacuum Blasting	2224
In-Situ Pipe Decontamination System	2379
Integrated Vertical and Overhead Decontamination System	2378
Laser Decontamination and Recycle of Metals	955
Laser Surface Cleaning	32
Paint Scaler	2952
Remotely Operated Scabbling	2099
Rotary Peening with Captive Shot	1812
ROTO PEEN Scaler and VAC PAC System	1943
Steam Vacuum Cleaning	1780

## DDFA Need Technical Responses

### NON-OST TECHNOLOGIES

Technology Title	Data Source
Betonamist	FIU LSDDP TIS
Cavity Plus Decon System	D&D Tech. Notebook
CO2 Pellet Cleaning	D&D Tech. Notebook
CORD-UV	D&D Tech. Notebook
Decoha Pipe Decontamination	FIU LSDDP TIS
Decontamination for Decommissioning (DFD) Process	D&D Tech. Notebook
En-Vac Robotic Climber	FIU LSDDP TIS
Horizontal Surface Shot Blaster (EBE 350)	D&D Tech. Notebook
KSI Tentacle Manipulator	FIU LSDDP TIS
Laser	FIU LSDDP TIS
Laser ZAWCAD	FIU LSDDP TIS
Milling	FIU LSDDP TIS
Mobile Decon Systems (super-heated water, abrasive blasting, or mechanical rotary systems)	D&D Tech. Notebook
Mobile Decontamination Facility	D&D Tech. Notebook
Model 4 Tube Cleaner	FIU LSDDP TIS
Pipe Decontamination System - FIU-HCET	FIU LSDDP TIS
RADCON LASER (ERASER)	FIU LSDDP TIS
Robotic Climber	FIU LSDDP TIS
Sivablast System	D&D Tech. Notebook - ANS Robotics/Remote Systems
Vertical Surface Shot Blaster (EBE 250 VHC)	D&D Tech. Notebook

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
CH-DD07-99	Decontamination of Fixed Surface Contamination of Concrete (thin layer removal)
CH-DD08-99	Remote Decontamination of In-ground Concrete Structures
CH-DD09-99	Tritium Removal by Laser Heating
ID-7.2.03	Decontamination of Concrete Walls, Floors, Ceilings, and Corners
ID-7.2.24	Decontamination of Metal Debris
ID-7.2.25	Decontamination of Metal Pipes
ID-7.2.26	Decontamination of Metal Walls, Floors, Ceilings, and Corners
OH-M902	Decontamination Techniques for Tritiated Gloveboxes
ORDD-02	Improved Decontamination of Equipment, Machinery, Fabricated Metals & Other Materials
ORDD-03	Improved Decontamination of Facility Concrete and Painted Surfaces
RF-DD09	Improved Decontamination of Porous Surfaces in Preparation for Building Demolition
RF-DD10	Improve Decontamination of Non-Porous Building Property and Structures
RL-DD021	Metal Decontamination and Recycling for the D&D Program
RL-DD03	Terminal Clean-Out and TRU Waste Decontamination of PFP
RL-DD046	Clean-Out of Isolated Piping Systems in Building 324
RL-DD06	Decontamination of Building 324 and 327
RL-DD061	Remote/Robotic Systems for 233-S
RL-DD063	Decontamination of Transuranic Debris for 233-S
SR00-4003	Material Recycle (Process Equipment, Metal, Steel, and Concrete)
SR00-4004	Decontamination of Contaminated Concrete
SR00-4015	Decontamination of Small Components

## DDFA Need Technical Responses

<b>Need ID Number</b>	AL-07-01-13-DD
<b>Need Title</b>	Decontamination of Difficult Access Interior Contamination
<b>Narrative Response to Need</b>	A need for improved technologies to fix or remove internal contamination located in ductwork, piping, and gloveboxes. The improved technologies should minimize primary and secondary waste.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	None.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
CORPEX Nuclear Decontamination Process	87
Ex-Situ Large Bore Pipe Decontamination and Characterization System	2375
In-Situ Pipe Decontamination System	2379
Reactor Surface Contamination Stabilization (Reactor Stabilizer)	1839
Removal of Contaminants from Equipment and Debris, and Waste Minimization Using TECHXTRACT	1450

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
CO2 Pellet Cleaning	D&D Tech. Notebook
CORD-UV	D&D Tech. Notebook
Decoha Pipe Decontamination	FIU LSDDP TIS
Decontamination for Decommissioning (DFD) Process	D&D Tech. Notebook
Mobile Decon Systems (super-heated water, abrasive blasting, or mechanical rotary systems)	D&D Tech. Notebook
Mobile Decontamination Facility	D&D Tech. Notebook
Model 4 Tube Cleaner	FIU LSDDP TIS
Passive Aerosol Generator (PAG)	FIU LSDDP TIS
Pipe Decontamination System - FIU-HCET	FIU LSDDP TIS

## DDFA Need Technical Responses

Polyurea Spray Elastomers

D&D Tech. Notebook

Sivablast System

D&D Tech. Notebook -  
ANS Robotics/Remote  
Systems

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### **SIMILAR NEEDS**

<b>Site Need ID</b>	<b>Need Title</b>
CH-DD09-99	Tritium Removal by Laser Heating
ID-7.2.24	Decontamination of Metal Debris
ID-7.2.25	Decontamination of Metal Pipes
OH-M902	Decontamination Techniques for Tritiated Gloveboxes
OH-M903	Method for Controlling Off-Gassing and Removable Contamination from Tritium Piping
ORDD-02	Improved Decontamination of Equipment, Machinery, Fabricated Metals & Other Materials
RF-DD03	Improved Interior Airborne Particulates Control
RF-DD10	Improve Decontamination of Non-Porous Building Property and Structures
RL-DD021	Metal Decontamination and Recycling for the D&D Program
RL-DD03	Terminal Clean-Out and TRU Waste Decontamination of PFP
RL-DD032	Contamination Fixative for 233-S
RL-DD04	TRU Waste Fixatives for PFP
RL-DD045	Fixatives for K3 Duct at WESF
RL-DD046	Clean-Out of Isolated Piping Systems in Building 324
RL-DD06	Decontamination of Building 324 and 327
RL-DD062	Method to Capture Airborne Alpha Contamination for 233-S
RL-DD063	Decontamination of Transuranic Debris for 233-S
RL-DD07	Fixatives for Building 324 and 327
SR00-4003	Material Recycle (Process Equipment, Metal, Steel, and Concrete)

## **DDFA Need Technical Responses**

SR00-4012	Stabilization of Contaminated Equipment/Components/Surfaces
SR00-4015	Decontamination of Small Components



## DDFA Need Technical Responses

<b>Need ID Number</b>	AL-07-01-14-MW
<b>Need Title</b>	Characterization and Segregation of TRU Waste Now Stored in Fiberglass Reinforced Plywood Boxes LANL
<b>Narrative Response to Need</b>	A need for a technology for sorting, segregation, and decontamination of TRU bulk waste in order to segregate TRU items from low-level waste.
<b>Focus Area</b>	MWFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	None.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Associated Particle Imaging Development	413
Decommissioning In-Situ Plutonium Inventory Monitor (DISPIM)	2241
Field Transportable Beta Spectrometer	1853
Long Range Alpha Detection for Component Monitoring	2382
Mobile Characterization System for Large Crates	2959
Portable Sensor for Hazardous Waste	31
Standard Waste Box Crate Counter	2917
Vehicle and Cargo Inspection System (VACIS)	2912
Waste Inspection Tomography (WIT)	259

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
Beta Contamination Detector with High Gamma Filtration/Rejection	FIU LSDDP TIS
DrumScan Modular Segmented Gamma Scanner	D&D Tech. Notebook
IonSens Conveyor Monitor	D&D Tech. Notebook
IPAN/GEA (imaging passive-active neutron/gamma energy assay) Crate System	D&D Tech. Notebook
IPAN/GEA (imaging passive-active neutron/gamma energy assay) Drum System	D&D Tech. Notebook
Waste Assay Systems	D&D Tech. Notebook

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
OH-WV-901	Characterization of Low Level and Transuranic Waste
OH-WV-909	Remote Handled Waste Processing
OK99-06	Mobile Non-Destructive Assay for TRU Waste Boxes
RF-DD04	Improved Measurement Techniques for Free Release of Property and Salvageable Equipment Contaminated with Radionuclides
RL-DD033	Field Screening for Hazardous Materials for 105-F and 105-DR Reactors
RL-DD035-S	Neutron Detection for Sorting Remote-Handled Radioactive Waste into TRU vs Non-TRU
RL-DD05	Characterization of Building 324 and 327
RL-DD060	Characterization for Waste Handling, Packaging and Processing for 233-S
RL-DD065	Backfill Removal and Segregation for the 105-F Spent Fuel Basin
RL-DD066	Material Removal and Segregation for the 105-F Spent Fuel Basin
SR00-4002	Characterization of Contaminated Surfaces
SR00-4011	Waste Characterization

## DDFA Need Technical Responses

<b>Need ID Number</b>	AL-08-01-17-MW
<b>Need Title</b>	Certifiability of Newly Generated TRU Waste
<b>Narrative Response to Need</b>	A need for innovative technologies to deal with major waste streams which produce non-certifiable waste, to be able to reduce or avoid entirely the generation of non-certifiable waste.
<b>Focus Area</b>	MWFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	None.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Associated Particle Imaging Development	413
Decommissioning In-Situ Plutonium Inventory Monitor (DISPIM)	2241
Long Range Alpha Detection for Component Monitoring	2382
Mobile Characterization System for Large Crates	2959
Standard Waste Box Crate Counter	2917
Waste Inspection Tomography (WIT)	259

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
DrumScan Modular Segmented Gamma Scanner	D&D Tech. Notebook
IonSens Conveyor Monitor	D&D Tech. Notebook
IPAN/GEA (imaging passive-active neutron/gamma energy assay) Crate System	D&D Tech. Notebook
IPAN/GEA (imaging passive-active neutron/gamma energy assay) Drum System	D&D Tech. Notebook
Waste Assay Systems	D&D Tech. Notebook

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
OH-WV-901	Characterization of Low Level and Transuranic Waste
OH-WV-909	Remote Handled Waste Processing
OK99-06	Mobile Non-Destructive Assay for TRU Waste Boxes
RL-DD035-S	Neutron Detection for Sorting Remote-Handled Radioactive Waste into TRU vs Non-TRU
RL-DD05	Characterization of Building 324 and 327
RL-DD060	Characterization for Waste Handling, Packaging and Processing for 233-S
RL-DD065	Backfill Removal and Segregation for the 105-F Spent Fuel Basin
RL-DD066	Material Removal and Segregation for the 105-F Spent Fuel Basin
SR00-4011	Waste Characterization

## DDFA Need Technical Responses

**Need ID Number** AL-09-01-02-DD-S  
**Need Title** Radiological Air Monitoring Needs for Current D&D/ER Operations

**Narrative Response to Need** A need for improved Radiological Air Monitoring technologies. Appropriate protection and adequate monitoring of radiological workers who may be exposed to airborne contaminants resulting from mechanical disturbances (soil removal, truck traffic, falling building debris, etc), and from the more extreme range of meteorological conditions (high winds and gustiness) must be addressed. Accuracy and confidence in measurements of airborne contaminants is crucial to the success of the overall operation.

**Focus Area** DDFA  
**Federal Focus Area POC** Bossart, Steve (304-285-4643)  
**Additional Comments** None.

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### OST TECHNOLOGIES

Technology Title	Technology ID
Beryllium Air Monitor	2914
Fast Response Isotopic Alpha Continuous Air Monitor (CAM)	2225
Passive Tritium Air and Surface Monitor	2957
Real-Time Surface Tritium Monitor	2933
Remote Surveillance of Facilities Awaiting D&D	2377

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Alpha Beta Particulate (continuous) Monitor	D&D Tech. Notebook
Area Monitor Probe (high-range GM probe)	D&D Tech. Notebook
Ionization Chambers	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
CH-DD04-99	Improved Worker Protection Equipment
RF-DD16	Real-Time Beryllium Air Monitoring
RF-DD18	Real-Time Radiation Air Monitoring During Building Demolition

## DDFA Need Technical Responses

<b>Need ID Number</b>	AL-09-01-04-DD-S
<b>Need Title</b>	Methodology for Effective D&D of Large Environmental Sites
<b>Narrative Response to Need</b>	A need for a technology that will selectively remove Pu from soils and materials.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	This need appears to be more appropriate for SubCon or Nuclear Materials Focus Area to address.

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### OST TECHNOLOGIES

No OST technologies have been identified and/or accepted.

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
FissTrack Plutonium Inventory Measurement System	D&D Tech. Notebook
IonSens Conveyor Monitor	D&D Tech. Notebook
Plutonium Can Contents Monitor	D&D Tech. Notebook
TRU-D 400 TRU Package Monitor	D&D Tech. Notebook
Waste Assay Systems	D&D Tech. Notebook

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### SIMILAR NEEDS

None identified.

## DDFA Need Technical Responses

<b>Need ID Number</b>	AL-09-01-06-MW
<b>Need Title</b>	Mobile Neutron Assay System (Mn/aS) for SWBs
<b>Narrative Response to Need</b>	A need for a technology that is a mobile neutron assay system for standard WIPP waste boxes.
<b>Focus Area</b>	MWFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	Through Work Package DD-12 the DDFA supports the development of the development of the Super-HENC Standard Waste Box Counter (TMS # 2917). This technology is being designed by LANL for testing and deployment at Rocky Flats as part of the DDFA supported ASTP project at RFETS.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Associated Particle Imaging Development	413
Long Range Alpha Detection for Component Monitoring	2382
Mobile Characterization System for Large Crates	2959
Standard Waste Box Crate Counter	2917
Waste Inspection Tomography (WIT)	259

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
DrumScan Modular Segmented Gamma Scanner	D&D Tech. Notebook
IPAN/GEA (imaging passive-active neutron/gamma energy assay) Crate System	D&D Tech. Notebook
IPAN/GEA (imaging passive-active neutron/gamma energy assay) Drum System	D&D Tech. Notebook
Waste Assay Systems	D&D Tech. Notebook

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
OH-WV-901	Characterization of Low Level and Transuranic Waste
OH-WV-909	Remote Handled Waste Processing
OK99-06	Mobile Non-Destructive Assay for TRU Waste Boxes
RL-DD035-S	Neutron Detection for Sorting Remote-Handled Radioactive Waste into TRU vs Non-TRU
RL-DD05	Characterization of Building 324 and 327
RL-DD060	Characterization for Waste Handling, Packaging and Processing for 233-S
RL-DD065	Backfill Removal and Segregation for the 105-F Spent Fuel Basin
RL-DD066	Material Removal and Segregation for the 105-F Spent Fuel Basin
SR00-4011	Waste Characterization



## DDFA Need Technical Responses

<b>Need ID Number</b>	AL-09-01-11-MW
<b>Need Title</b>	Characterization of Equipment Potentially Contaminated with Alpha Emitting Transuranic (TRU) Radionuclides
<b>Narrative Response to Need</b>	A need for a technology to perform radiological characterizations of equipment potentially contaminated with alpha emitting transuranic radionuclides.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	None.

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### OST TECHNOLOGIES

Technology Title	Technology ID
Decommissioning In-Situ Plutonium Inventory Monitor (DISPIM)	2241
Electret Ion Chambers	2315
Field Transportable Beta Spectrometer	1853
Mobile Characterization System for Large Crates	2959
Portable X-Ray Fluorescence Spectrometer	1790
Portable X-Ray, K-Edge Heavy Metal Detector	134
Standard Waste Box Crate Counter	2917

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Beta Contamination Detector with High Gamma Filtration/Rejection	FIU LSDDP TIS
DrumScan Modular Segmented Gamma Scanner	D&D Tech. Notebook
IPAN/GEA (imaging passive-active neutron/gamma energy assay) Crate System	D&D Tech. Notebook
IPAN/GEA (imaging passive-active neutron/gamma energy assay) Drum System	D&D Tech. Notebook
Waste Assay Systems	D&D Tech. Notebook

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
ORDD-01	Improved Characterization of Equipment, Machinery, Fabricated Metals & Other Materials
RF-DD01	Improved Pre-D&D Characterization for Distinguishing Between TRU and Low-Level Contamination
RF-DD04	Improved Measurement Techniques for Free Release of Property and Salvageable Equipment Contaminated with Radionuclides
RL-DD033	Field Screening for Hazardous Materials for 105-F and 105-DR Reactors
SR00-4002	Characterization of Contaminated Surfaces

## DDFA Need Technical Responses

<b>Need ID Number</b>	AL-09-01-12-DD
<b>Need Title</b>	Decontamination and Volume Reduction of TRU and LLW Metals
<b>Narrative Response to Need</b>	A need for technologies for decontamination and volume reduction of TRU and LLW metallic components.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	None.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Advanced Recyclable Media System	1971
CORPEX Nuclear Decontamination Process	87
Decontamination and Volume Reduction System (DVRS)	2242
Decontamination Using Liquid Nitrogen Carrier with Solid Carbon Dioxide Pellet	1456
Diamond Wire Cutting Technology Assessment of Tokamak Fusion Rest Reactor Vacuum Vessel Surrogate	2389
Dismantlement Processes Adaptation and Development	969
Dual Arm Work Platform Teleoperated Robotics System	1787
Ex-Situ Large Bore Pipe Decontamination and Characterization System	2375
Hand Held Shear	2304
High Speed Clamshell Pipe Cutter	1807
Laser Cutting and Size Reduction	1477
Laser Decontamination and Recycle of Metals	955
Laser Surface Cleaning	32
Mega-Tech Hydraulic Shears	2953
Pipe Cutting and Crimping System	2955
Remote/Robotic Size Reduction System	2916
Removal of Contaminants from Equipment and Debris, and Waste Minimization Using TECHXTRACT	1450
Rocky Flats D&D Initiative - Central Size Reduction Facility	2918

## DDFA Need Technical Responses

Self Contained Pipe Cutting Shear	1948
Size Reduction Machine	2395
Soda Blasting Decontamination Process	369
Soft Media Blast Cleaning	1899
Steam Vacuum Cleaning	1780

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Arc Saw	FIU LSDDP TIS
B-1000 Supercompactor	D&D Tech. Notebook
CO2 Pellet Cleaning	D&D Tech. Notebook
Dry Size Reduction System (DSRS)	FIU LSDDP TIS
Hydraulic Cutters/Shears	D&D Tech. Notebook
Hydraulic Shears	FIU LSDDP TIS
Integrated Characterization, Decontamination & Decommissioning Demonstration (ICD3)	FIU LSDDP TIS
Laser	FIU LSDDP TIS
Laser ZAWCAD	FIU LSDDP TIS
LUKAS Rescue Tools - Hydraulic Cutting Shears	D&D Tech. Notebook
Mobile Decon Systems (super-heated water, abrasive blasting, or mechanical rotary systems)	D&D Tech. Notebook
Mobile Decontamination Facility	D&D Tech. Notebook
Pipe Crimper	FIU LSDDP TIS
RADCON LASER (ERASER)	FIU LSDDP TIS
Sivablast System	D&D Tech. Notebook - ANS Robotics/Remote Systems
Wachs Wheel Cutter	FIU LSDDP TIS

## DDFA Need Technical Responses

<b>SIMILAR NEEDS</b>	
<b>Site Need ID</b>	<b>Need Title</b>
CH-DD01-00	Reduced Emissions Metal Cutting
CH-DD06-99	Size Reduction of Massive Metal Structures
CH-DD09-99	Tritium Removal by Laser Heating
ID-7.2.12	Cutting Equipment for Large Items in Above Ground or Underground Structures & Underwater
ID-7.2.24	Decontamination of Metal Debris
ID-7.2.25	Decontamination of Metal Pipes
ID-7.2.29	Remote Demolition of Machinery
ID-7.2.30	Remote Demolition of Metal Structures
ID-7.2.31	Remote Demolition of Piping
NV07-0001-03	Oversize TRU Waste Size Reduction
OH-F010	Safe and Efficient Process Piping and Conduit Dismantlement
OH-F027	Improved Equipment Dismantlement
OH-M902	Decontamination Techniques for Tritiated Gloveboxes
OH-WV-909	Remote Handled Waste Processing
OH-WV-910	Size Reduction of Components
ORDD-02	Improved Decontamination of Equipment, Machinery, Fabricated Metals & Other Materials
ORDD-07	Remote Dismantlement Methods
ORDD-08	Mercury Removal from Metal and Porous Surfaces
ORDD-09	Improved Non-Thermal Cutting of Process Equipment
RF-DD10	Improve Decontamination of Non-Porous Building Property and Structures
RF-DD11	Improved Size Reduction of Contaminated Equipment and Demolition Waste
RL-DD02	Glove Box Size Reduction System for PFP
RL-DD021	Metal Decontamination and Recycling for the D&D Program

## **DDFA Need Technical Responses**

RL-DD030	Cutting Plutonium Contaminated Pipe for 233-S
RL-DD048	Volume Reduction of Equipment for CDI
RL-DD06	Decontamination of Building 324 and 327
RL-DD061	Remote/Robotic Systems for 233-S
RL-DD063	Decontamination of Transuranic Debris for 233-S
RL-DD08	Remote Cutting Technologies for Building 324 and 327
RL-MW02	Remotely Controlled Size and Volume Reduction Techniques for RH MLLW and RH transuranic waste (TRUW)
SR00-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment
SR00-4003	Material Recycle (Process Equipment, Metal, Steel, and Concrete)
SR00-4008	Dismantlement of Concrete-Encased Piping
SR00-4015	Decontamination of Small Components

## DDFA Need Technical Responses

<b>Need ID Number</b>	AL-09-01-13-DD
<b>Need Title</b>	On-Site Quantitation of Plutonium and Americium in Soil and Concrete Rubble from D&D Projects
<b>Narrative Response to Need</b>	A need for a technology to analyze soil and concrete rubble samples for plutonium and americium at the generation point and in a matter of hours (near real-time).
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	None.

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### OST TECHNOLOGIES

Technology Title	Technology ID
Long Range Alpha Detection for Component Monitoring	2382
Segmented Gate System	2158

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Beta Contamination Detector with High Gamma Filtration/Rejection	FIU LSDDP TIS
IonSens Conveyor Monitor	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
OH-WV-901	Characterization of Low Level and Transuranic Waste
OH-WV-909	Remote Handled Waste Processing
OK99-06	Mobile Non-Destructive Assay for TRU Waste Boxes
RL-DD033	Field Screening for Hazardous Materials for 105-F and 105-DR Reactors
RL-DD035-S	Neutron Detection for Sorting Remote-Handled Radioactive Waste into TRU vs Non-TRU
RL-DD05	Characterization of Building 324 and 327
RL-DD060	Characterization for Waste Handling, Packaging and Processing for 233-S
RL-DD064	Characterization of the 105-F Spent Fuel Basin

## **DDFA Need Technical Responses**

RL-DD065	Backfill Removal and Segregation for the 105-F Spent Fuel Basin
RL-DD066	Material Removal and Segregation for the 105-F Spent Fuel Basin
SR00-4011	Waste Characterization



## DDFA Need Technical Responses

**Need ID Number** AL-09-01-14-DD

**Need Title** Quantitation of Tritium in Concrete Rubble from D&D Projects

**Narrative Response to Need** A need for technologies to provide accurate and consistent results for the quantitation of tritium in concrete rubble.

**Focus Area** DDFA

**Federal Focus Area POC** Bossart, Steve (304-285-4643)

**Additional Comments** None.

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### OST TECHNOLOGIES

Technology Title	Technology ID
Real-Time Surface Tritium Monitor	2933
Segmented Gate System	2158
Solid State Pin Diode Direct Reading Surface Tritium Detector	2956

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### NON-OST TECHNOLOGIES

No Non-OST technologies have been identified and/or accepted.

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### SIMILAR NEEDS

Site Need ID	Need Title
RL-DD033	Field Screening for Hazardous Materials for 105-F and 105-DR Reactors
SR00-4007	Characterization of Volumetrically Contaminated Surfaces

## DDFA Need Technical Responses

<b>Need ID Number</b>	AL-09-01-15-DD
<b>Need Title</b>	Disposal & Recycle Technologies for Scrap Uranium Chips and Turnings
<b>Narrative Response to Need</b>	A need for new technologies to significantly reduce or eliminate the radioactive waste stream from uranium cutting, machining, and fabrication operations.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	None.

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted.

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted.

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### SIMILAR NEEDS

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None identified.

## DDFA Need Technical Responses

**Need ID Number** CH-DD01-00

**Need Title** Reduced Emissions Metal Cutting

**Narrative Response to Need** The DDFA interpretation of this need is for improved technologies to size reduce small tanks, large I-beams, glove boxes, and large diameter piping containing tritium or activation products while reducing emissions to near zero.

**Focus Area** DDFA

**Federal Focus Area POC** Bossart, Steve (304-285-4643)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
Diamond Wire Cutting Technology Assessment of Tokamak Fusion Rest Reactor Vacuum Vessel Surrogate	2389
Hand Held Shear	2304
High Speed Clamshell Pipe Cutter	1807
Mega-Tech Hydraulic Shears	2953
Mobile Work Platform	2243
Oxy-Gasoline Torch	1847
Pipe Cutting and Crimping System	2955
Remote/Robotic Size Reduction System	2916
Rocky Flats D&D Initiative - Central Size Reduction Facility	2918
Size Reduction Machine	2395

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Dry Size Reduction System (DSRS)	FIU LSDDP TIS
Hydraulic Cutters/Shears	D&D Tech. Notebook
Wachs Wheel Cutter	FIU LSDDP TIS

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-01-DD	Size Reduction Technology for TRU Mixed Waste
AL-00-01-05-DD	Alternative Cutting Techniques for Piping
AL-00-01-07-DD	Ex Situ Glove Box Size Reduction System
AL-00-01-12-DD	Remote-Handled Size Reduction Technology
AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals
ID-7.2.12	Cutting Equipment for Large Items in Above Ground or Underground Structures & Underwater
ID-7.2.29	Remote Demolition of Machinery
ID-7.2.30	Remote Demolition of Metal Structures
ID-7.2.31	Remote Demolition of Piping
NV07-0001-03	Oversize TRU Waste Size Reduction
OH-F010	Safe and Efficient Process Piping and Conduit Dismantlement
OH-F027	Improved Equipment Dismantlement
OH-WV-909	Remote Handled Waste Processing
OH-WV-910	Size Reduction of Components
ORDD-07	Remote Dismantlement Methods
ORDD-09	Improved Non-Thermal Cutting of Process Equipment
RF-DD11	Improved Size Reduction of Contaminated Equipment and Demolition Waste
RL-DD02	Glove Box Size Reduction System for PFP
RL-DD030	Cutting Plutonium Contaminated Pipe for 233-S
RL-DD061	Remote/Robotic Systems for 233-S
RL-DD08	Remote Cutting Technologies for Building 324 and 327
RL-MW02	Remotely Controlled Size and Volume Reduction Techniques for RH MLLW and RH transuranic waste (TRUW)
SR00-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste

## **DDFA Need Technical Responses**

Processing Equipment

SR00-4001      Dismantlement of Large and/or Complex Equipment and Structures

## DDFA Need Technical Responses

**Need ID Number** CH-DD01-99

**Need Title** Characterization for Decontamination/Decommissioning of the Brookhaven Graphite Research Reactor

**Narrative Response to Need** The DDFA interpretation of this need is for technical assistance to develop a plan for characterization of the Brookhaven Graphite Research Reactor. One recommendation is to assemble a Value Engineering Team to review the status of the BGRR and their knowledge of current improved and baseline characterization methods. The VE Team will assist BGRR principals in developing the characterization plan. DDFA supports the characterization of BNL and the BGRR through an AST project "Deployment of Innovative Characterization Technologies and the Implementation of the MARSSIM Process at Radiologically Contaminated Sites".

**Focus Area** DDFA

**Federal Focus Area POC** Bossart, Steve (304-285-4643)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
BetaScint Fiber-Optic Sensor for Detecting Strontium-90 and Uranium-238 in Soil	70
BNL ASTD: Deployment of Innovative Characterization Technologies and Implementation of the MARSSIM Process at Radiologically Contaminated Sites	2374
In Situ Object Counting System	2098

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### NON-OST TECHNOLOGIES

No Non-OST technologies have been identified and/or accepted.

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### SIMILAR NEEDS

None identified.

## DDFA Need Technical Responses

**Need ID Number** CH-DD04-99

**Need Title** Improved Worker Protection Equipment

**Narrative Response to Need** The DDFA interpretation of this need is for worker protection equipment that will reduce the incidence of worker injuries. Workers need improved protection equipment to reduce the incidences of falls, eye and ear injuries, head injuries, metatarsal and hand injuries, and heat and cold stress. The DDFA has identified Delta Temax Personal Ice Cooling System as its primary product to reduce heat stress of workers wearing layers of PPE. The DDFA recommends a discussion with Argonne NL's decommissioning staff to discuss specific areas of concern where improved PPE could make a difference.

**Focus Area** DDFA

**Federal Focus Area POC** Bossart, Steve (304-285-4643)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
Advanced Worker Protection System	75
AeroGo Air Lift Pallet System	2396
Excel Automatic Locking Scaffold	2320
FRHAM-TEX Anti Contamination Suit	1854
Heat Stress Monitoring System	1953
NuFab Anti Contamination Suit	1855
Personal Ice Cooling System (PICS)	1898
Protective Clothing Based on Permselective Membrane and Carbon Adsorption	95
Sealed-Seam Sack Suit	1954
Wireless Remote Monitoring System	2104

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Alpha Beta Particulate (continuous) Monitor	D&D Tech. Notebook
Area Monitor Probe (high-range GM probe)	D&D Tech. Notebook

## DDFA Need Technical Responses

Digital Alarming Dosimeters	D&D Tech. Notebook
Dosimeters/Dose Mapping	D&D Tech. Notebook
Impact Visor	FIU LSDDP TIS
Kool Jacket	D&D Tech. Notebook
Kool Jacket Lite	D&D Tech. Notebook
Kool Vest	D&D Tech. Notebook
Wireless Remote Monitor-Plus	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
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AL-09-01-02-DD-S	Radiological Air Monitoring Needs for Current D&D/ER Operations
OH-F042	Telemetric Monitoring of Heat Stress
RF-DD08	Improved Worker Protection Clothing and Systems
RF-DD16	Real-Time Beryllium Air Monitoring
RF-DD18	Real-Time Radiation Air Monitoring During Building Demolition
SR00-4016	Health and Safety Technologies



## DDFA Need Technical Responses

**Need ID Number** CH-DD06-99

**Need Title** Size Reduction of Massive Metal Structures

**Narrative Response to Need** The DDFA interpretation of this need is for improved cutting tools to remove and size reduce large metal structures in the ZPR facility. Improvements would be sought in the areas of increased production rate, reduced emissions, and improved industrial safety. The DDFA recommends the oxy-gasoline torch and a cost-effective and fast technology for size reduction of large metal structures. The diamond wire saw recently demonstrated on the mockup of the Tokamak Fusion Test Reactor section could also be considered for size reduction of large metal structures.

**Focus Area** DDFA

**Federal Focus Area POC** Bossart, Steve (304-285-4643)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
Diamond Wire Cutting Technology Assessment of Tokamak Fusion Rest Reactor Vacuum Vessel Surrogate	2389
Dual Arm Work Platform Teleoperated Robotics System	1787
Hand Held Shear	2304
High Speed Clamshell Pipe Cutter	1807
Laser Cutting and Size Reduction	1477
Mega-Tech Hydraulic Shears	2953
Mobile Robot Worksystem (ROSIE)	1799
Mobile Work Platform	2243
Oxy-Gasoline Torch	1847
Pipe Cutting and Crimping System	2955
Remote/Robotic Size Reduction System	2916
Rocky Flats D&D Initiative - Central Size Reduction Facility	2918
Self Contained Pipe Cutting Shear	1948
Size Reduction Machine	2395

## DDFA Need Technical Responses

Swing-Reduced Crane Control	1815
Track Mounted Shear/Crusher	2303

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Arc Saw	FIU LSDDP TIS
Dry Size Reduction System (DSRS)	FIU LSDDP TIS
Hydraulic Cutters/Shears	D&D Tech. Notebook
Hydraulic Shears	FIU LSDDP TIS
LUKAS Rescue Tools - Hydraulic Cutting Shears	D&D Tech. Notebook
Pipe Crimper	FIU LSDDP TIS
Wachs Wheel Cutter	FIU LSDDP TIS

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-01-DD	Size Reduction Technology for TRU Mixed Waste
AL-00-01-05-DD	Alternative Cutting Techniques for Piping
AL-00-01-07-DD	Ex Situ Glove Box Size Reduction System
AL-00-01-12-DD	Remote-Handled Size Reduction Technology
AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals
ID-7.2.12	Cutting Equipment for Large Items in Above Ground or Underground Structures & Underwater
ID-7.2.29	Remote Demolition of Machinery
ID-7.2.30	Remote Demolition of Metal Structures
ID-7.2.31	Remote Demolition of Piping
NV07-0001-03	Oversize TRU Waste Size Reduction
OH-F010	Safe and Efficient Process Piping and Conduit Dismantlement
OH-F027	Improved Equipment Dismantlement

## **DDFA Need Technical Responses**

OH-WV-909	Remote Handled Waste Processing
OH-WV-910	Size Reduction of Components
ORDD-07	Remote Dismantlement Methods
ORDD-09	Improved Non-Thermal Cutting of Process Equipment
RF-DD11	Improved Size Reduction of Contaminated Equipment and Demolition Waste
RL-DD02	Glove Box Size Reduction System for PFP
RL-DD030	Cutting Plutonium Contaminated Pipe for 233-S
RL-DD061	Remote/Robotic Systems for 233-S
RL-DD08	Remote Cutting Technologies for Building 324 and 327
RL-MW02	Remotely Controlled Size and Volume Reduction Techniques for RH MLLW and RH transuranic waste (TRUW)
SR00-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment
SR00-4001	Dismantlement of Large and/or Complex Equipment and Structures
SR00-4008	Dismantlement of Concrete-Encased Piping

## DDFA Need Technical Responses

**Need ID Number** CH-DD07-99

**Need Title** Decontamination of Fixed Surface Contamination of Concrete (thin layer removal)

**Narrative Response to Need** The DDFA interpretation of this need is for technologies to remove a thin layer of concrete from floors and walls. The technology must have a high production rate, generate little airborne contamination, and produce little or no secondary waste. Decontamination of cracks seems to be an area of concern. In addition, this need may not be valid in FY2000 because Argonne NL is planning to bid the concrete decontamination work, but cannot specify the technology. The Marcrist diamond shaver offered by Bluegrass Concrete Cutting may solve a portion of this need.

**Focus Area** DDFA

**Federal Focus Area POC** Bossart, Steve (304-285-4643)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
Biodegradation of Concrete	1421
Centrifugal Shot Blast System	1851
Concrete Grinder	2102
Concrete Shaver	1950
Concrete Spaller	2152
High Productivity Vacuum Blasting	2224
Integrated Vertical and Overhead Decontamination System	2378
Laser Surface Cleaning	32
Remotely Operated Scabbling	2099
Rotary Peening with Captive Shot	1812
ROTO PEEN Scaler and VAC PAC System	1943

## DDFA Need Technical Responses

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Cavity Plus Decon System	D&D Tech. Notebook
Horizontal Surface Shot Blaster (EBE 350)	D&D Tech. Notebook
Laser	FIU LSDDP TIS
Laser ZAWCAD	FIU LSDDP TIS
Mobile Decon Systems (super-heated water, abrasive blasting, or mechanical rotary systems)	D&D Tech. Notebook
RADCON LASER (ERASER)	FIU LSDDP TIS
Robotic Climber	FIU LSDDP TIS
Sivablast System	D&D Tech. Notebook - ANS Robotics/Remote Systems
Vertical Surface Shot Blaster (EBE 250 VHC)	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-06-DD	Effective Decontamination of Concrete
AL-07-01-12-DD	Decontaminate and Decommission Radioactively Contaminated Facilities
ID-7.2.03	Decontamination of Concrete Walls, Floors, Ceilings, and Corners
ORDD-03	Improved Decontamination of Facility Concrete and Painted Surfaces
ORDD-06	Improved Remote Decontamination Methods
RL-DD06	Decontamination of Building 324 and 327
RL-DD061	Remote/Robotic Systems for 233-S
SR00-4004	Decontamination of Contaminated Concrete

## DDFA Need Technical Responses

**Need ID Number** CH-DD08-99

**Need Title** Remote Decontamination of In-ground Concrete Structures

**Narrative Response to Need** The DDFA interpretation of this need is for improved technologies to remotely remove fixed and loose contamination from coated and uncoated concrete floors and walls. Contamination includes Cs-137, Co-60, and some alpha emitting radionuclides. The area is classified as a confined space. Up to 1/4-inch of concrete surface may need to be removed by the improved technologies.

**Focus Area** DDFA

**Federal Focus Area POC** Bossart, Steve (304-285-4643)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
2-D Linear Motion System (Wall Walker)	1476
Dual Arm Work Platform Teleoperated Robotics System	1787
Laser Surface Cleaning	32
Mobile Robot Worksystem (ROSIE)	1799
Remotely Operated Scabbling	2099
Robotic Vacuum - Deployed Wall Scabbler / Detector	2321

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
En-Vac Robotic Climber	FIU LSDDP TIS
Robotic Climber	FIU LSDDP TIS
Vertical Surface Shot Blaster (EBE 250 VHC)	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-06-DD	Effective Decontamination of Concrete
AL-07-01-12-DD	Decontaminate and Decommission Radioactively Contaminated Facilities
ID-7.2.03	Decontamination of Concrete Walls, Floors, Ceilings, and Corners

## **DDFA Need Technical Responses**

ORDD-03	Improved Decontamination of Facility Concrete and Painted Surfaces
ORDD-06	Improved Remote Decontamination Methods
RF-DD09	Improved Decontamination of Porous Surfaces in Preparation for Building Demolition
RL-DD06	Decontamination of Building 324 and 327
RL-DD061	Remote/Robotic Systems for 233-S
SR00-4004	Decontamination of Contaminated Concrete

## DDFA Need Technical Responses

**Need ID Number** CH-DD09-99

**Need Title** Tritium Removal by Laser Heating

**Narrative Response to Need** The DDFA interpretation of this need is for evaluation of remote-operated Nd:YAG laser to volatilize and collect tritium co-deposited with carbon during TFTR plasma operations. This evaluation of the Nd:YAG laser could be considered for demonstration in the Mound LSDDP.

**Focus Area** DDFA

**Federal Focus Area POC** Bossart, Steve (304-285-4643)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
Laser Decontamination and Recycle of Metals	955
Laser Surface Cleaning	32

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Laser	FIU LSDDP TIS
Laser ZAWCAD	FIU LSDDP TIS
RADCON LASER (ERASER)	FIU LSDDP TIS

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-07-01-12-DD	Decontaminate and Decommission Radioactively Contaminated Facilities
AL-07-01-13-DD	Decontamination of Difficult Access Interior Contamination
AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals
ID-7.2.24	Decontamination of Metal Debris
ID-7.2.25	Decontamination of Metal Pipes
ID-7.2.26	Decontamination of Metal Walls, Floors, Ceilings, and Corners
RL-DD063	Decontamination of Transuranic Debris for 233-S



## DDFA Need Technical Responses

**Need ID Number** CH-DD11-99

**Need Title** Remote Characterization of In-ground Concrete Structures

**Narrative Response to Need** The DDFA interpretation of this need is for improved technologies to remotely characterize and sample fixed and loose contamination from coated and uncoated concrete floors and walls. Contamination includes Cs-137, Co-60, and some alpha emitting radionuclides. The area is classified as a confined space. One recommendation is to review the applicability of characterization technologies deployed in the Canyon Disposition Initiative.

**Focus Area** DDFA

**Federal Focus Area POC** Bossart, Steve (304-285-4643)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
2-D Linear Motion System (Wall Walker)	1476
CDI Remote Characterization System	2178
Cogema 3-D Gamma Imaging	2302
Electret Ion Chambers	2315
Gamma Cam (TM) Radiation Imaging System	1840
Gamma Ray Imaging System	1793
In Situ Object Counting System	2098
Mobile Automated Characterization System	1798
Quantrad Scout Gamma Spectroscopy System (2960)	2960
Remote Concrete Coring	2329
Robotic Vacuum - Deployed Wall Scabbler / Detector	2321
Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)	97

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### NON-OST TECHNOLOGIES

No Non-OST technologies have been identified and/or accepted.

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
ID-7.2.06	Remote Characterization for Building Release, Large Area Surface Soil Characterization, and Characterization of Sumps, Debris, Underwater Areas, and Buried Pipes and Utilities
ID-7.2.19	Remote/Robotic Technologies for Access and Deployment of Characterization & Sampling Tools
NV10-0001-10	Improved Detection and Characterization of Radioactive Contamination on Large Concrete and Metal Surfaces
OH-M901	Improved Facility Survey Techniques
ORDD-12	Improved Characterization of Buildings and Facilities
RL-DD034	Remote/Robotic Technologies for CDI
RL-DD036	General Radiation Surveys of Concrete and Equipment in the Materials Processing Facilities for CDI
RL-DD05	Characterization of Building 324 and 327
RL-DD061	Remote/Robotic Systems for 233-S
RL-DD064	Characterization of the 105-F Spent Fuel Basin
SR00-4002	Characterization of Contaminated Surfaces

## DDFA Need Technical Responses

**Need ID Number** CH-MW03-99

**Need Title** Lead Removal, Segregation and Disposal

**Narrative Response to Need** The DDFA interpretation of this need is for improved remotely-deployed cutting technologies to separate clean lead from radioactive material to avoid generation of mixed waste. The generation of water waste should be minimized or eliminated if possible.

**Focus Area** MWFA

**Federal Focus Area POC** Bossart, Steve (304-285-4643)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
Dual Arm Work Platform Teleoperated Robotics System	1787

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
CO2 Pellet Cleaning	D&D Tech. Notebook
Nukem wire saw	Personal knowledge

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-02-DD	Characterization Technologies for Verifying Presence or Absence of Contamination in Structures Scheduled for D&D
AL-00-01-10-DD	Accelerated 'Real Time' Volumetric Radioassay of Lead Forms
ID-7.2.14	Technology for Decontamination of Radionuclide Contaminated Lead Shot, Brick, and Sheeting for Free Release
ID-7.2.16	Field Screening of Lead (shot, bricks, sheeting) for Radionuclide Contamination
RL-DD059	Lead Decontamination for the S&M Program
SR00-4003	Material Recycle (Process Equipment, Metal, Steel, and Concrete)
SR00-4015	Decontamination of Small Components

## DDFA Need Technical Responses

**Need ID Number** CH-MW07-99

**Need Title** Stabilization of Tritium Organic Waste

**Narrative Response to Need** The DDFA interpretation of this need is for an improved technology to stabilize/treat tritium-contaminated Krytox oil which currently requires expensive commercial boiler destruction. Krytox oil is a fluorinated oil which prevents it from being disposed at Hanford because it is classified as dangerous under State of Washington regulations.

**Focus Area** MWFA

**Federal Focus Area POC** Bossart, Steve (304-285-4643)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
Oil Solidification	2313

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
PETROSET II	FIU LSDDP TIS

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-03-DD	Containment and Confinement of Hazardous and Radioactively Contaminated Liquids Cost-Effectively; Containment of Airborne Contamination
AL-00-01-09-DD	Method for Decontaminating and Disposing of Tritium-Contaminated Pump Oil
OH-M905	Treatment of Tritiated Pump Oils and Mercury

## DDFA Need Technical Responses

<b>Need ID Number</b>	CH-SS01-00
<b>Need Title</b>	Detritiation of Water
<b>Narrative Response to Need</b>	Safely remove tritium activity from water in a cost effective manner.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	Need to determine whether need is being partially or fully met within existing EMSP projects.

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### OST TECHNOLOGIES

Technology Title	Technology ID
NURES Nuclide Removal System	2937

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Solidification/Stabilization Agents	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-03-DD	Containment and Confinement of Hazardous and Radioactively Contaminated Liquids Cost-Effectively; Containment of Airborne Contamination
ID-7.2.10	Treatment Technologies to Treat Reactor Canal (TRA-660) Water
SR00-4013	Containment/Confinement Technologies
SR00-4014	Basin Cleanup Technology

## DDFA Need Technical Responses

<b>Need ID Number</b>	ID-7.2.03
<b>Need Title</b>	Decontamination of Concrete Walls, Floors, Ceilings, and Corners
<b>Narrative Response to Need</b>	The DDFA interpretation of this need is for improved concrete decontamination technologies to remove one inch or less concrete from walls, floors, ceilings, corners, and cracks.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	Ongoing LSDDPs at INEEL and Mound could select improved technologies for demonstration which address this need. Also, ongoing efforts at FIU-HCET may continue to evaluate technologies for decontamination of large concrete floor areas.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
2-D Linear Motion System (Wall Walker)	1476
Biodegradation of Concrete	1421
Centrifugal Shot Blast System	1851
Concrete Grinder	2102
Concrete Shaver	1950
Concrete Spaller	2152
High Productivity Vacuum Blasting	2224
Integrated Vertical and Overhead Decontamination System	2378
Remotely Operated Scabbling	2099
Robotic Vacuum - Deployed Wall Scabbler / Detector	2321
Rotary Peening with Captive Shot	1812
ROTO PEEN Scaler and VAC PAC System	1943

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
Cavity Plus Decon System	D&D Tech. Notebook
En-Vac Robotic Climber	FIU LSDDP TIS

## DDFA Need Technical Responses

Horizontal Surface Shot Blaster (EBE 350)	D&D Tech. Notebook
KSI Tentacle Manipulator	FIU LSDDP TIS
Laser ZAWCAD	FIU LSDDP TIS
Milling	FIU LSDDP TIS
Mobile Decon Systems (super-heated water, abrasive blasting, or mechanical rotary systems)	D&D Tech. Notebook
RADCON LASER (ERASER)	FIU LSDDP TIS
Robotic Climber	FIU LSDDP TIS
Sivablast System	D&D Tech. Notebook - ANS Robotics/Remote Systems
Vertical Surface Shot Blaster (EBE 250 VHC)	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-06-DD	Effective Decontamination of Concrete
AL-07-01-12-DD	Decontaminate and Decommission Radioactively Contaminated Facilities
CH-DD07-99	Decontamination of Fixed Surface Contamination of Concrete (thin layer removal)
CH-DD08-99	Remote Decontamination of In-ground Concrete Structures
ORDD-03	Improved Decontamination of Facility Concrete and Painted Surfaces
ORDD-06	Improved Remote Decontamination Methods
ORDD-08	Mercury Removal from Metal and Porous Surfaces
RF-DD09	Improved Decontamination of Porous Surfaces in Preparation for Building Demolition
RL-DD06	Decontamination of Building 324 and 327
RL-DD061	Remote/Robotic Systems for 233-S
SR00-4004	Decontamination of Contaminated Concrete

## DDFA Need Technical Responses

**Need ID Number** ID-7.2.06

**Need Title** Remote Characterization for Building Release, Large Area Surface Soil Characterization, and Characterization of Sumps, Debris, Underwater Areas, and Buried Pipes and Utilities

**Narrative Response to Need** DDFA interpretation of need is for improved remote characterization technologies to survey, video and/or collect samples in underground piping, underwater, and high radiation areas. Technology must be able to be deployed inside pipes as small as 6-inch diameter and be deployed 40 feet into the pipe.

**Focus Area** DDFA

**Federal Focus Area POC** Bossart, Steve (304-285-4643)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
CDI Remote Characterization System	2178
Cogema 3-D Gamma Imaging	2302
Electromagnetic Radiography	2390
Gamma Cam (TM) Radiation Imaging System	1840
Gamma Ray Imaging System	1793
Ground Based Laser Induced Fluorescence Imaging	1999
In Situ Object Counting System	2098
Indoor Radiation Mapping Using Laser Assisted Ranging and Data System (LARADS)	1946
Internal Duct Characterization System	42
Light Duty Utility Arm	85
Mobile Automated Characterization System	1798
Modified Light Duty Utility Arm (MLDUA)	40
Non-Intrusive Liquid Level Detection System	2403
Pipe Crawler Internal Piping Characterization System	1810
Pipe Explorer (TM) System	74
Remote Underwater Characterization System (RUCS)	2151



## DDFA Need Technical Responses

Small Pipe Characterization System (SPCS)	43
Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)	97

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
MicroVGTV	D&D Tech. Notebook
Pipe Walker	FIU LSDDP TIS
Scarab III Remote Vehicle	D&D Tech. Notebook - ANS Robotics/Remote Systems
Versatrax; Remote Pipe Inspection	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
CH-DD11-99	Remote Characterization of In-ground Concrete Structures
NV10-0001-10	Improved Detection and Characterization of Radioactive Contamination on Large Concrete and Metal Surfaces
OH-C901	Robotic Device to Improve Characterization of Underground Pipe Lines
OH-M901	Improved Facility Survey Techniques
ORDD-01	Improved Characterization of Equipment, Machinery, Fabricated Metals & Other Materials
ORDD-12	Improved Characterization of Buildings and Facilities
RF-DD01	Improved Pre-D&D Characterization for Distinguishing Between TRU and Low-Level Contamination
RL-DD034	Remote/Robotic Technologies for CDI
RL-DD036	General Radiation Surveys of Concrete and Equipment in the Materials Processing Facilities for CDI
RL-DD039	Solids (Sediment/Sludge/Dust) Characterization for CDI
RL-DD05	Characterization of Building 324 and 327
RL-DD061	Remote/Robotic Systems for 233-S
RL-DD064	Characterization of the 105-F Spent Fuel Basin

## **DDFA Need Technical Responses**

SR00-4002	Characterization of Contaminated Surfaces
SR00-4005	Characterization of Inaccessible Areas

## DDFA Need Technical Responses

**Need ID Number** ID-7.2.08

**Need Title** Robotics for D&D

**Narrative Response to Need** DDFA interpretation is for improved robotic and remote deployment platforms capable of using multiple end effectors in areas with high radiation. Main application of technology is for remote characterization and size reduction. Improvements are sought in the areas of dexterity, mobility in tight spaces, and precision tooling. Need to weigh cost of robotics versus manual labor.

**Focus Area** DDFA

**Federal Focus Area POC** Bossart, Steve (304-285-4643)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
2-D Linear Motion System (Wall Walker)	1476
CDI Remote Characterization System	2178
Dual Arm Work Platform Teleoperated Robotics System	1787
Dual-Point Impedance Control for Telerobotics	2173
Houdini-II Remotely Operated Vehicle System	2085
Houdini: Reconfigurable In Tank Mobile Robot	98
Intelligent Inspection and Survey Robot	272
Light Duty Utility Arm	85
Mobile Robot Worksystem (ROSIE)	1799
Mobile Work Platform	2243
Modified Light Duty Utility Arm (MLDUA)	40
Operator Interface for Robotic Applications	281
Remote Control Concrete Demolition System	2100
Remote/Robotic Size Reduction System	2916
Robot Task Space Analyzer	2171
Robotic Platform for B-Cell Cleanout	2919
Robotics Crawler	2328
Size Reduction Machine	2395
Standardized Dismantlement System for Decommissioning (PAR)	1475

## DDFA Need Technical Responses

Swing-Reduced Crane Control	1815
Track Mounted Shear/Crusher	2303

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
ARTISAN (heavy duty hydraulic manipulators)	D&D Tech. Notebook
Minescout	D&D Tech. Notebook
MiniTrac & MicroTrac; Remote Operated Crawlers	D&D Tech. Notebook
Mobile Platform, Heavy-Duty, Multiple Manipulator Robot	FIU LSDDP TIS
MURV-100 Teleoperated Robot System	D&D Tech. Notebook
NEATER (Nuclear Engineered Advanced Robots)	D&D Tech. Notebook
Pioneer Robot	D&D Tech. Notebook - ANS Robotics/Remote Systems
Portable Articulated Arm Deployment System (PAADS)	D&D Tech. Notebook - ANS Robotics/Remote Systems
Tele-Operated Crawler System	D&D Tech. Notebook - ANS Robotics/Remote Systems

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### SIMILAR NEEDS

Site Need ID	Need Title
OH-WV-903	Vitrification Expended Material Processing
RL-DD010	Radiation Hardened Robotics for Building 324
RL-DD034	Remote/Robotic Technologies for CDI
RL-DD061	Remote/Robotic Systems for 233-S
RL-DD065	Backfill Removal and Segregation for the 105-F Spent Fuel Basin
RL-DD066	Material Removal and Segregation for the 105-F Spent Fuel Basin
SR00-2031	Develop Remote Technology to Improve DWPF Operations

## DDFA Need Technical Responses

<b>Need ID Number</b>	ID-7.2.09
<b>Need Title</b>	Rapid Wood Radiological Contamination Monitor
<b>Narrative Response to Need</b>	DDFA interpretation is for improved technologies to identify the type and quantity of radioactive contamination in wood, including any cracks or crevices. This will enable contaminated wood to be separated from non-contaminated wood.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	DDFA is not aware of any technologies to meet this specific need. DDFA suggests investigating baseline and improved technologies used for characterization of concrete. ISOCS could potentially meet this need.

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### OST TECHNOLOGIES

Technology Title	Technology ID
In Situ Object Counting System	2098

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### NON-OST TECHNOLOGIES

No Non-OST technologies have been identified and/or accepted.

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### SIMILAR NEEDS

None identified.

## DDFA Need Technical Responses

<b>Need ID Number</b>	ID-7.2.10
<b>Need Title</b>	Treatment Technologies to Treat Reactor Canal (TRA-660) Water
<b>Narrative Response to Need</b>	DDFA interpretation is for an improved technology to remove radioactive and RCRA contaminants from pool waters and other liquids.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	DDFA was under the impression that the TRA-660 were sufficiently clean as to not require treatment before discharge. Eight percent of power reactors used membrane-type filters.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
NURES Nuclide Removal System	2937
Self Assembled Monolayers on Mesoporous Supports for RCRA Metal Removal	1447
Specialized Separation Utilizing 3M Membrane Technology	1543
Water Soluble Chelating Polymers for RCRA Metal Removal	1439

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
Liquid waste treatment technologies	D&D Tech. Notebook
Rototherm Portable Concentrator	FIU LSDDP TIS

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### SIMILAR NEEDS

<b>Site Need ID</b>	<b>Need Title</b>
CH-SS01-00	Detritiation of Water
SR00-4014	Basin Cleanup Technology

## DDFA Need Technical Responses

**Need ID Number** ID-7.2.11

**Need Title** Asbestos Wrapped/Insulated Pipe Removal and Packaging

**Narrative Response to Need** DDFA interpretation of this need is for a technology to encapsulate, cut, and remove piping wrapped/insulated with asbestos. Pipes range in size from ½ in. to 8 in. diameter. Technology must not employ the use of glovebags or gloveboxes.

**Focus Area** DDFA

**Federal Focus Area POC** Bossart, Steve (304-285-4643)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
Asbestos Pipe-Insulation Removal System	148
In Situ Chemical Treatment of Asbestos	73
Laser Cutting and Size Reduction	1477
VecLoader HEPA Vacuum Insulation Removal	1784

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted.

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### SIMILAR NEEDS

Site Need ID	Need Title
SR00-4006	Asbestos Treatment to Allow Reuse

## DDFA Need Technical Responses

**Need ID Number** ID-7.2.12

**Need Title** Cutting Equipment for Large Items in Above Ground or Underground Structures & Underwater

**Narrative Response to Need** DDFA interpretation of this need is for an improved technology to cut large metal objects above ground, underground, and underwater. The technology must be able to size reduce 12-inch thick steel, piping to 14 in. diameter, concrete to 24 in. thick, and fibrous material to 24 in. thick. The system shall be capable of operating with minimal clearance and in tight spaces.

**Focus Area** DDFA

**Federal Focus Area POC** Bossart, Steve (304-285-4643)

### Additional Comments

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### OST TECHNOLOGIES

Technology Title	Technology ID
Decontamination and Volume Reduction System (DVRS)	2242
Diamond Wire Cutting Technology Assessment of Tokamak Fusion Rest Reactor Vacuum Vessel Surrogate	2389
Dismantlement Processes Adaptation and Development	969
Dual Arm Work Platform Teleoperated Robotics System	1787
Hand Held Shear	2304
High Speed Clamshell Pipe Cutter	1807
Laser Cutting and Size Reduction	1477
Liquid-Nitrogen Cooled Diamond-Wire Concrete Cutting	2107
Mega-Tech Hydraulic Shears	2953
Mobile Robot Worksystem (ROSIE)	1799
Oxy-Gasoline Torch	1847
Pipe Cutting and Crimping System	2955
Remote Control Concrete Demolition System	2100
Remote/Robotic Size Reduction System	2916
Rocky Flats D&D Initiative - Central Size Reduction Facility	2918
Self Contained Pipe Cutting Shear	1948



## DDFA Need Technical Responses

Size Reduction Machine	2395
Track Mounted Shear/Crusher	2303
Zero Added Waste Cutting, Abrading and Drilling	1709

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Arc Saw	FIU LSDDP TIS
Diamond Wire Saw	D&D Tech. Notebook
Dry Size Reduction System (DSRS)	FIU LSDDP TIS
Hydraulic Cutters/Shears	D&D Tech. Notebook
Hydraulic Shears	FIU LSDDP TIS
Integrated Characterization, Decontamination & Decommissioning Demonstration (ICD3)	FIU LSDDP TIS
LUKAS Rescue Tools - Hydraulic Cutting Shears	D&D Tech. Notebook
Pipe Crimper	FIU LSDDP TIS
Wachs Wheel Cutter	FIU LSDDP TIS

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-01-DD	Size Reduction Technology for TRU Mixed Waste
AL-00-01-05-DD	Alternative Cutting Techniques for Piping
AL-00-01-07-DD	Ex Situ Glove Box Size Reduction System
AL-00-01-12-DD	Remote-Handled Size Reduction Technology
AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals
CH-DD01-00	Reduced Emissions Metal Cutting
CH-DD06-99	Size Reduction of Massive Metal Structures
NV07-0001-03	Oversize TRU Waste Size Reduction
OH-F010	Safe and Efficient Process Piping and Conduit Dismantlement

## **DDFA Need Technical Responses**

OH-F027	Improved Equipment Dismantlement
OH-WV-909	Remote Handled Waste Processing
OH-WV-910	Size Reduction of Components
ORDD-07	Remote Dismantlement Methods
ORDD-09	Improved Non-Thermal Cutting of Process Equipment
RF-DD11	Improved Size Reduction of Contaminated Equipment and Demolition Waste
RF-DD20	Characterization and Removal of Large Contaminated Equipment Entombed in Concrete
RL-DD02	Glove Box Size Reduction System for PFP
RL-DD030	Cutting Plutonium Contaminated Pipe for 233-S
RL-DD034	Remote/Robotic Technologies for CDI
RL-DD061	Remote/Robotic Systems for 233-S
RL-DD08	Remote Cutting Technologies for Building 324 and 327
RL-MW02	Remotely Controlled Size and Volume Reduction Techniques for RH MLLW and RH transuranic waste (TRUW)
SR00-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment
SR00-4001	Dismantlement of Large and/or Complex Equipment and Structures
SR00-4008	Dismantlement of Concrete-Encased Piping

## DDFA Need Technical Responses

<b>Need ID Number</b>	ID-7.2.13
<b>Need Title</b>	Penetrations in Concrete Floor and Demolition of Concrete Roof
<b>Narrative Response to Need</b>	The DDFA interpretation of this need is for an improved technology to demolish and collapse the roof onto the IET floor. Also, penetrations need to be made into the floor to allow for soil sampling and for percolation of water into the soil through the demolished roof and floor. The side and interior walls may be left standing or demolished.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	Need has gone away because facility has been turned over to Army for experiments. They will turn it back over to INEEL with holes in floor and roof caved in.

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### OST TECHNOLOGIES

Technology Title	Technology ID
Remote Concrete Coring	2329

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Implosion	Fernald D&D practice

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### SIMILAR NEEDS

Site Need ID	Need Title
OH-F047	Pulverizing Concrete for Site Aggregate Needs
ORDD-07	Remote Dismantlement Methods
RF-DD20	Characterization and Removal of Large Contaminated Equipment Entombed in Concrete
SR00-4001	Dismantlement of Large and/or Complex Equipment and Structures
SR00-4008	Dismantlement of Concrete-Encased Piping

## DDFA Need Technical Responses

<b>Need ID Number</b>	ID-7.2.14
<b>Need Title</b>	Technology for Decontamination of Radionuclide Contaminated Lead Shot, Brick, and Sheeting for Free Release
<b>Narrative Response to Need</b>	The DDFA interpretation of this need is for improved cost-effective technologies to decontaminate lead for free release. The lead can be in the form of shot, bricks, plates, and irregular shapes and sheets
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	

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### OST TECHNOLOGIES

Technology Title	Technology ID
Advanced Recyclable Media System	1971
Decontamination Using Liquid Nitrogen Carrier with Solid Carbon Dioxide Pellet	1456
Removal of Contaminants from Equipment and Debris, and Waste Minimization Using TECHXTRACT	1450
Soda Blasting Decontamination Process	369
Soft Media Blast Cleaning	1899
Steam Vacuum Cleaning	1780

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
CO2 Pellet Cleaning	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
CH-MW03-99	Lead Removal, Segregation and Disposal
RL-DD059	Lead Decontamination for the S&M Program
SR00-4003	Material Recycle (Process Equipment, Metal, Steel, and Concrete)
SR00-4015	Decontamination of Small Components

## DDFA Need Technical Responses

**Need ID Number** ID-7.2.15

**Need Title** Field Screening of Paint/Painted Surfaces to Identify Contamination such as; PCB, Lead, and other RCRA Metals in the Paint

**Narrative Response to Need** The DDFA interpretation of this need is for a field chemical screening method that provides quantifiable data for PCB, lead, and other RCRA metal concentrations in paint.

**Focus Area** DDFA

**Federal Focus Area POC** Bossart, Steve (304-285-4643)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
Lead Paint Analyzer	2317
NITON 800 Series Multi-Element Spectrum Analyzer	2397
Online Measurement of the Progress of Decontamination	2376
PCB Analyzer	2398
Portable Sensor for Hazardous Waste	31
Portable X-Ray Fluorescence Spectrometer	1790
Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)	97

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### NON-OST TECHNOLOGIES

No Non-OST technologies have been identified and/or accepted.

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-02-DD	Characterization Technologies for Verifying Presence or Absence of Contamination in Structures Scheduled for D&D
RF-DD02	High Speed Integrated Characterization System for (1) Radioactive, (2) Hazardous and (3) Toxic Contamination
RL-DD039	Solids (Sediment/Sludge/Dust) Characterization for CDI
SR00-4002	Characterization of Contaminated Surfaces

## DDFA Need Technical Responses

<b>Need ID Number</b>	ID-7.2.16
<b>Need Title</b>	Field Screening of Lead (shot, bricks, sheeting) for Radionuclide Contamination
<b>Narrative Response to Need</b>	The DDFA interpretation of this need is for field-deployable technologies for real-time volumetric radioassay of lead. The lead forms are sheet, plate, shot, wool, bricks, irregular shapes and others.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	In FY2000, the CMST program will produce a report on methods for volumetric assay of radionuclides in lead.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Lead Paint Analyzer	2317
NITON 800 Series Multi-Element Spectrum Analyzer	2397

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### NON-OST TECHNOLOGIES

No Non-OST technologies have been identified and/or accepted.

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### SIMILAR NEEDS

<b>Site Need ID</b>	<b>Need Title</b>
AL-00-01-02-DD	Characterization Technologies for Verifying Presence or Absence of Contamination in Structures Scheduled for D&D
AL-00-01-10-DD	Accelerated 'Real Time' Volumetric Radioassay of Lead Forms
CH-MW03-99	Lead Removal, Segregation and Disposal

## DDFA Need Technical Responses

<b>Need ID Number</b>	ID-7.2.17
<b>Need Title</b>	Field Screening of Samples and Equipment Surfaces to Identify PCB Contamination
<b>Narrative Response to Need</b>	The DDFA interpretation of this need is for a field method to determine the concentration of PCB contamination on equipment surfaces.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	PCB analyzer demonstrated in INEEL LSDDP in November, 1999.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
PCB Analyzer	2398
Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)	97

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### NON-OST TECHNOLOGIES

No Non-OST technologies have been identified and/or accepted.

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### SIMILAR NEEDS

<b>Site Need ID</b>	<b>Need Title</b>
AL-00-01-02-DD	Characterization Technologies for Verifying Presence or Absence of Contamination in Structures Scheduled for D&D
RL-DD033	Field Screening for Hazardous Materials for 105-F and 105-DR Reactors
SR00-4002	Characterization of Contaminated Surfaces

## DDFA Need Technical Responses

<b>Need ID Number</b>	ID-7.2.18
<b>Need Title</b>	General Use Remote Tools for Handling Small Items (e.g., pliers) or for Hooking to Rigging
<b>Narrative Response to Need</b>	The DDFA interpretation of this need is for remote, general use, versatile tools that would be able to pick up small objects and be able to attach rigging to larger pieces of equipment. The tools shall function as pliers. The tools shall tighten/loosen nuts/bolts. These tools shall be able to function underwater in the reactor canal to a depth of 24 ft.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	DDFA has not identified specific tools to meet this need. The DDFA may consider initiating a development/evaluation project to evaluate the appropriateness of existing tools to meet this need and to modify/develop small versatile tools (e.g., wrench, pliers)

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted.

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### NON-OST TECHNOLOGIES

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Technology Title	Data Source
Remote Handling Systems & Manipulators	D&D Tech. Notebook
Telbot Manipulator System	D&D Tech. Notebook - ANS Robotics/Remote Systems

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### SIMILAR NEEDS

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Site Need ID	Need Title
RL-DD065	Backfill Removal and Segregation for the 105-F Spent Fuel Basin
RL-DD066	Material Removal and Segregation for the 105-F Spent Fuel Basin
SR00-2031	Develop Remote Technology to Improve DWPF Operations
SR00-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment



## DDFA Need Technical Responses

<b>Need ID Number</b>	ID-7.2.19
<b>Need Title</b>	Remote/Robotic Technologies for Access and Deployment of Characterization & Sampling Tools
<b>Narrative Response to Need</b>	The DDFA interpretation of this need is for remote/robotics technology to characterize and sample in a small tunnel. Characterization includes video logging, radiation measurements asbestos, radiochemical, and chemical sampling and analysis. Functions will be performed for concrete, solids/sludge, and liquid.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	The Canyon Disposition Initiative is deploying state-of-the-art characterization and remote/robotic platforms to remotely characterize the U-Plant at Hanford.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
2-D Linear Motion System (Wall Walker)	1476
CDI Remote Characterization System	2178
Coherent Laser Vision System	94
Dual Arm Work Platform Teleoperated Robotics System	1787
Houdini-II Remotely Operated Vehicle System	2085
Houdini: Reconfigurable In Tank Mobile Robot	98
Intelligent Inspection and Survey Robot	272
Intelligent Mobile Sensor System for Autonomous Monitoring and inspection	264
Interactive, Computer-Enhanced, Remote-Viewing System	33
Internal Duct Characterization System	42
Light Duty Utility Arm	85
Mobile Robot Worksystem (ROSIE)	1799
Modified Light Duty Utility Arm (MLDUA)	40
Operator Interface for Robotic Applications	281
Remote Concrete Coring	2329

## DDFA Need Technical Responses

Robotic End Effector for Inspection and Sampling of Storage Tanks	278
Robotic Platform for B-Cell Cleanout	2919
Small Pipe Characterization System (SPCS)	43
Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)	97

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
ARTISAN (heavy duty hydraulic manipulators)	D&D Tech. Notebook
Autonomous Robotic Inspection Experimental System (ARIES)	D&D Tech. Notebook - ANS Robotics/Remote Systems
Circumspector	D&D Tech. Notebook
Environmentally Robust LADAR for 3D Imaging	D&D Tech. Notebook - ANS Robotics/Remote Systems
Minescout	D&D Tech. Notebook
MiniTrac & MicroTrac; Remote Operated Crawlers	D&D Tech. Notebook
Mobile Platform, Heavy-Duty, Multiple Manipulator Robot	FIU LSDDP TIS
MURV-100 Teleoperated Robot System	D&D Tech. Notebook
NEATER (Nuclear Engineered Advanced Robots)	D&D Tech. Notebook
Photogrammetry	FIU LSDDP TIS
Pioneer Robot	D&D Tech. Notebook - ANS Robotics/Remote Systems
Portable Articulated Arm Deployment System (PAADS)	D&D Tech. Notebook - ANS Robotics/Remote Systems
Scissors; Camera Deployment Mechanism	D&D Tech. Notebook
Tele-Operated Crawler System	D&D Tech. Notebook - ANS Robotics/Remote Systems

## DDFA Need Technical Responses

TV3 Stereoscopic TV

D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
CH-DD11-99	Remote Characterization of In-ground Concrete Structures
OH-WV-903	Vitrification Expended Material Processing
RL-DD010	Radiation Hardened Robotics for Building 324
RL-DD011	Structural Integrity Inspection - 324/327 Buildings Hot Cell Liners
RL-DD034	Remote/Robotic Technologies for CDI
RL-DD035	Visual/Spatial Imaging for CDI
RL-DD047	Remote Viewing for Hot Cells in Buildings 324 and 327
RL-DD053	Operational Modeling for CDI
RL-DD055	Remote Monitoring System Upgrades for the S&M Program
RL-DD061	Remote/Robotic Systems for 233-S
RL-DD064	Characterization of the 105-F Spent Fuel Basin
RL-DD065	Backfill Removal and Segregation for the 105-F Spent Fuel Basin
RL-DD066	Material Removal and Segregation for the 105-F Spent Fuel Basin
SR00-2031	Develop Remote Technology to Improve DWPF Operations

## DDFA Need Technical Responses

<b>Need ID Number</b>	ID-7.2.20
<b>Need Title</b>	Quantitative Underwater Radionuclide Characterization of Structures, Equipment, and Contaminated Pool Walls
<b>Narrative Response to Need</b>	The DDFA interpretation of this need is for an improved technologies to visually and Radiologically characterize water-filled storage pools.. The system shall give radiation measurements that range from an equivalent of a few millirem per hour to several rem per hour. The radiation detection system shall be capable of directional and general area measurements.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	

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### OST TECHNOLOGIES

Technology Title	Technology ID
Remote Underwater Characterization System (RUCS)	2151

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Rocky Nozzle Scanner	D&D Tech. Notebook - ANS Robotics/Remote Systems
Seamor	D&D Tech. Notebook
Underwater Remotely Operated Detectors	FIU LSDDP TIS
URSULA Reactor Vessel NDE Robot	D&D Tech. Notebook - ANS Robotics/Remote Systems

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### SIMILAR NEEDS

Site Need ID	Need Title
RL-DD01	Cesium/Strontium Capsule Leak Detection System for WESF
RL-DD041	Capsule Integrity Assessment Method for WESF
RL-SNF01	Contaminant Mapping of K-Basin

## DDFA Need Technical Responses

<b>Need ID Number</b>	ID-7.2.21
<b>Need Title</b>	Removal of Two Reactors as Single Unit
<b>Narrative Response to Need</b>	DDFA interpretation of this need is for a remote technology to lift research reactors from water canal and place them into a shielded container.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	DDFA did not identify specific technologies to meet this need. It may be possible to demonstrate a technology in the INEEL LSDDP to meet this need. INEEL has used DDROPS to determine lift points, gama-cam and RUCS to find hot spots, and DDROPS to predict radiation exposure. INEEL will use portable shears on Brokk machine to cut up the reactor.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
D&D and Remediation Optimal Planning System (DDROPS)	2322
Remote Control Concrete Demolition System	2100
Remote Underwater Characterization System (RUCS)	2151

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
Champion Shears	LSDDP (SRS)

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### SIMILAR NEEDS

None identified.

## DDFA Need Technical Responses

<b>Need ID Number</b>	ID-7.2.22
<b>Need Title</b>	Concrete and Asphalt Recycle
<b>Narrative Response to Need</b>	DDFA interpretation of this need is for technologies and approaches to recycle concrete and asphalt from decommissioning projects.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	Recycle of concrete is the goal of INEEL's ASTD project entitled Concrete Recycling ASTD.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
INEEL ASTD: Release of Concrete for Recycle from D&D Projects	2373
Removal of Contaminants from Equipment and Debris, and Waste Minimization Using TECHXTRACT	1450
Reuse of Concrete from Contaminated Structures	210

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### NON-OST TECHNOLOGIES

No Non-OST technologies have been identified and/or accepted.

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### SIMILAR NEEDS

<b>Site Need ID</b>	<b>Need Title</b>
SR00-4003	Material Recycle (Process Equipment, Metal, Steel, and Concrete)

## DDFA Need Technical Responses

**Need ID Number** ID-7.2.23

**Need Title** Copper Wire Recycle

**Narrative Response to Need** DDFA interpretation of this need is for a technology to recycle or reuse copper from cable or wire from facility decommissioning.

**Focus Area** DDFA

**Federal Focus Area POC** Bossart, Steve (304-285-4643)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
Metal Recycle Technology	1611
Nukem Copper Recycle System	2958

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Decon Recovery Services Copper Recycle System	Personal knowledge

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### SIMILAR NEEDS

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None identified.

## DDFA Need Technical Responses

<b>Need ID Number</b>	ID-7.2.24
<b>Need Title</b>	Decontamination of Metal Debris
<b>Narrative Response to Need</b>	DDFA interpretation of this need is for technologies to decontaminate metal debris. The decontamination process should be cost effective and safe and should not generate large volumes of a secondary waste.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	INEEL says that all these technologies work, but may need to use them in combination. Needs to be cost-effective. Need to continue to look at improved metal decontamination technologies.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Advanced Recyclable Media System	1971
CORPEX Nuclear Decontamination Process	87
Decontamination and Volume Reduction System (DVRS)	2242
Decontamination Using Liquid Nitrogen Carrier with Solid Carbon Dioxide Pellet	1456
Ex-Situ Large Bore Pipe Decontamination and Characterization System	2375
Laser Decontamination and Recycle of Metals	955
Laser Surface Cleaning	32
Removal of Contaminants from Equipment and Debris, and Waste Minimization Using TECHXTRACT	1450
Soda Blasting Decontamination Process	369
Soft Media Blast Cleaning	1899
Steam Vacuum Cleaning	1780

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
CO2 Pellet Cleaning	D&D Tech. Notebook
Integrated Characterization, Decontamination & Decommissioning Demonstration (ICD3)	FIU LSDDP TIS



## DDFA Need Technical Responses

Laser	FIU LSDDP TIS
Laser ZAWCAD	FIU LSDDP TIS
Mobile Decon Systems (super-heated water, abrasive blasting, or mechanical rotary systems)	D&D Tech. Notebook
Mobile Decontamination Facility	D&D Tech. Notebook
RADCON LASER (ERASER)	FIU LSDDP TIS
Sivablast System	D&D Tech. Notebook - ANS Robotics/Remote Systems

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-07-01-12-DD	Decontaminate and Decommission Radioactively Contaminated Facilities
AL-07-01-13-DD	Decontamination of Difficult Access Interior Contamination
AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals
CH-DD09-99	Tritium Removal by Laser Heating
OH-M902	Decontamination Techniques for Tritiated Gloveboxes
ORDD-02	Improved Decontamination of Equipment, Machinery, Fabricated Metals & Other Materials
ORDD-08	Mercury Removal from Metal and Porous Surfaces
RF-DD10	Improve Decontamination of Non-Porous Building Property and Structures
RL-DD021	Metal Decontamination and Recycling for the D&D Program
RL-DD06	Decontamination of Building 324 and 327
RL-DD063	Decontamination of Transuranic Debris for 233-S
SR00-4003	Material Recycle (Process Equipment, Metal, Steel, and Concrete)
SR00-4015	Decontamination of Small Components

## DDFA Need Technical Responses

**Need ID Number** ID-7.2.25

**Need Title** Decontamination of Metal Pipes

**Narrative Response to Need** DDFA interpretation of need is for technologies to decontaminate the interior and exterior of pipes. Contaminated metal pipe exists in many sizes, geometrys, and degrees and types of contamination.

**Focus Area** DDFA

**Federal Focus Area POC** Bossart, Steve (304-285-4643)

### Additional Comments

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### OST TECHNOLOGIES

Technology Title	Technology ID
Advanced Recyclable Media System	1971
CORPEX Nuclear Decontamination Process	87
Decontamination Using Liquid Nitrogen Carrier with Solid Carbon Dioxide Pellet	1456
Ex-Situ Large Bore Pipe Decontamination and Characterization System	2375
Laser Decontamination and Recycle of Metals	955
Laser Surface Cleaning	32
Removal of Contaminants from Equipment and Debris, and Waste Minimization Using TECHXTRACT	1450
Soda Blasting Decontamination Process	369
Soft Media Blast Cleaning	1899
Steam Vacuum Cleaning	1780

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
CO2 Pellet Cleaning	D&D Tech. Notebook
Decontamination for Decommissioning (DFD) Process	D&D Tech. Notebook
Electropolishing	Dick Meservey
Laser	FIU LSDDP TIS
Laser ZAWCAD	FIU LSDDP TIS

## DDFA Need Technical Responses

Mobile Decon Systems (super-heated water, abrasive blasting, or mechanical rotary systems)	D&D Tech. Notebook
Mobile Decontamination Facility	D&D Tech. Notebook
RADCON LASER (ERASER)	FIU LSDDP TIS
Sivablast System	D&D Tech. Notebook - ANS Robotics/Remote Systems

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-07-01-12-DD	Decontaminate and Decommission Radioactively Contaminated Facilities
AL-07-01-13-DD	Decontamination of Difficult Access Interior Contamination
AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals
CH-DD09-99	Tritium Removal by Laser Heating
OH-M902	Decontamination Techniques for Tritiated Gloveboxes
ORDD-02	Improved Decontamination of Equipment, Machinery, Fabricated Metals & Other Materials
ORDD-08	Mercury Removal from Metal and Porous Surfaces
RF-DD10	Improve Decontamination of Non-Porous Building Property and Structures
RL-DD021	Metal Decontamination and Recycling for the D&D Program
RL-DD06	Decontamination of Building 324 and 327
RL-DD063	Decontamination of Transuranic Debris for 233-S
SR00-4003	Material Recycle (Process Equipment, Metal, Steel, and Concrete)
SR00-4015	Decontamination of Small Components

## DDFA Need Technical Responses

**Need ID Number** ID-7.2.26

**Need Title** Decontamination of Metal Walls, Floors, Ceilings, and Corners

**Narrative Response to Need** DDFA interpretation of this need is for technologies to decontaminate metal from floors, walls, ceilings, and corners. Removal of metal may require 1/8-inch to 1/4-inch for large areas. Cracks may require removal of metal up to 10 inches deep.

**Focus Area** DDFA

**Federal Focus Area POC** Bossart, Steve (304-285-4643)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
2-D Linear Motion System (Wall Walker)	1476
Advanced Recyclable Media System	1971
Decontamination Using Liquid Nitrogen Carrier with Solid Carbon Dioxide Pellet	1456
Laser Decontamination and Recycle of Metals	955
Laser Surface Cleaning	32
Rotary Peening with Captive Shot	1812
ROTO PEEN Scaler and VAC PAC System	1943
Soda Blasting Decontamination Process	369
Soft Media Blast Cleaning	1899
Steam Vacuum Cleaning	1780

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Cavity Plus Decon System	D&D Tech. Notebook
CO2 Pellet Cleaning	D&D Tech. Notebook
En-Vac Robotic Climber	FIU LSDDP TIS
Horizontal Surface Shot Blaster (EBE 350)	D&D Tech. Notebook
Laser	FIU LSDDP TIS

## DDFA Need Technical Responses

Laser ZAWCAD	FIU LSDDP TIS
RADCON LASER (ERASER)	FIU LSDDP TIS
Sivablast System	D&D Tech. Notebook - ANS Robotics/Remote Systems
Vertical Surface Shot Blaster (EBE 250 VHC)	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-07-01-12-DD	Decontaminate and Decommission Radioactively Contaminated Facilities
CH-DD09-99	Tritium Removal by Laser Heating
ORDD-02	Improved Decontamination of Equipment, Machinery, Fabricated Metals & Other Materials
RL-DD06	Decontamination of Building 324 and 327

## DDFA Need Technical Responses

<b>Need ID Number</b>	ID-7.2.27
<b>Need Title</b>	Reuse of Metal Pipes, Lumber, Lead, and Other Metals
<b>Narrative Response to Need</b>	DDFA interpretation of this need is for technologies to decontaminate metal pipes, lumber, lead, and other metals.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	Need to identify end products that make sense.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
CORPEX Nuclear Decontamination Process	87
Decontamination and Conversion of Nickel Radioactive Scrap Metal	234
Laser Decontamination and Recycle of Metals	955
Metal Recycle Technology	1611
Nukem Copper Recycle System	2958
Removal of Contaminants from Equipment and Debris, and Waste Minimization Using TECHXTRACT	1450
Removal of Radiological Contaminants from Nickel Scrap	965
SEG Recycle and Reuse of Radioactively Contaminated Scrap Metal	1595
Stainless Steel Beneficial Reuse	80

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### NON-OST TECHNOLOGIES

No Non-OST technologies have been identified and/or accepted.

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### SIMILAR NEEDS

<b>Site Need ID</b>	<b>Need Title</b>
ORDD-02	Improved Decontamination of Equipment, Machinery, Fabricated Metals & Other Materials
RL-DD021	Metal Decontamination and Recycling for the D&D Program
SR00-4003	Material Recycle (Process Equipment, Metal, Steel, and Concrete)

## DDFA Need Technical Responses

**Need ID Number** ID-7.2.28

**Need Title** Remote Demolition of Concrete Structures

**Narrative Response to Need** DDFA interpretation of this need is for technologies to remotely demolish concrete and metal structures. Worker can be in immediate area, but the desire is to not use hand-held tools (e.g., jackhammers).

**Focus Area** DDFA

**Federal Focus Area POC** Bossart, Steve (304-285-4643)

### Additional Comments

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### OST TECHNOLOGIES

Technology Title	Technology ID
Diamond Wire Cutting Technology Assessment of Tokamak Fusion Rest Reactor Vacuum Vessel Surrogate	2389
Dual Arm Work Platform Teleoperated Robotics System	1787
Mobile Robot Worksystem (ROSIE)	1799
Remote Control Concrete Demolition System	2100
Track Mounted Shear/Crusher	2303

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Expandable grouts	Personal knowledge
Implosion	Fernald D&D practice

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### SIMILAR NEEDS

Site Need ID	Need Title
OH-F047	Pulverizing Concrete for Site Aggregate Needs
ORDD-07	Remote Dismantlement Methods
RF-DD20	Characterization and Removal of Large Contaminated Equipment Entombed in Concrete
SR00-4001	Dismantlement of Large and/or Complex Equipment and Structures

## DDFA Need Technical Responses

**Need ID Number** ID-7.2.29

**Need Title** Remote Demolition of Machinery

**Narrative Response to Need** DDFA interpretation of this need is for technologies to remotely dismantle and demolish metal machinery.

**Focus Area** DDFA

**Federal Focus Area POC** Bossart, Steve (304-285-4643)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
Decontamination and Volume Reduction System (DVRS)	2242
Dismantlement Processes Adaptation and Development	969
Dual Arm Work Platform Teleoperated Robotics System	1787
Laser Cutting and Size Reduction	1477
Mega-Tech Hydraulic Shears	2953
Mobile Robot Worksystem (ROSIE)	1799
Oxy-Gasoline Torch	1847
Remote Control Concrete Demolition System	2100
Remote/Robotic Size Reduction System	2916
Rocky Flats D&D Initiative - Central Size Reduction Facility	2918
Track Mounted Shear/Crusher	2303

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Dry Size Reduction System (DSRS)	FIU LSDDP TIS
Explosive Cutting Using Linear-Shaped Charges	Dick Meservey
Hydraulic Cutters/Shears	D&D Tech. Notebook
Plasma Arc Torch	Unknown



## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-01-DD	Size Reduction Technology for TRU Mixed Waste
AL-00-01-07-DD	Ex Situ Glove Box Size Reduction System
AL-00-01-12-DD	Remote-Handled Size Reduction Technology
AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals
CH-DD01-00	Reduced Emissions Metal Cutting
CH-DD06-99	Size Reduction of Massive Metal Structures
NV07-0001-03	Oversize TRU Waste Size Reduction
OH-F027	Improved Equipment Dismantlement
OH-WV-909	Remote Handled Waste Processing
OH-WV-910	Size Reduction of Components
ORDD-07	Remote Dismantlement Methods
ORDD-09	Improved Non-Thermal Cutting of Process Equipment
RL-DD02	Glove Box Size Reduction System for PFP
RL-DD061	Remote/Robotic Systems for 233-S
RL-DD08	Remote Cutting Technologies for Building 324 and 327
RL-MW02	Remotely Controlled Size and Volume Reduction Techniques for RH MLLW and RH transuranic waste (TRUW)
SR00-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment

## DDFA Need Technical Responses

**Need ID Number** ID-7.2.30

**Need Title** Remote Demolition of Metal Structures

**Narrative Response to Need** DDFA interpretation of this need is for technologies to remotely dismantle metal structures such as I-beams and concrete structures.

**Focus Area** DDFA

**Federal Focus Area POC** Bossart, Steve (304-285-4643)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
Decontamination and Volume Reduction System (DVRS)	2242
Dismantlement Processes Adaptation and Development	969
Dual Arm Work Platform Teleoperated Robotics System	1787
Laser Cutting and Size Reduction	1477
Mobile Robot Worksystem (ROSIE)	1799
Oxy-Gasoline Torch	1847
Remote Control Concrete Demolition System	2100
Remote/Robotic Size Reduction System	2916
Rocky Flats D&D Initiative - Central Size Reduction Facility	2918
Track Mounted Shear/Crusher	2303

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Dry Size Reduction System (DSRS)	FIU LSDDP TIS
Explosive Cutting Using Linear-Shaped Charges	Dick Mesurvey
Hydraulic Cutters/Shears	D&D Tech. Notebook
Plasma Arc Torch	Unknown

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-01-DD	Size Reduction Technology for TRU Mixed Waste
AL-00-01-07-DD	Ex Situ Glove Box Size Reduction System
AL-00-01-12-DD	Remote-Handled Size Reduction Technology
AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals
CH-DD01-00	Reduced Emissions Metal Cutting
CH-DD06-99	Size Reduction of Massive Metal Structures
NV07-0001-03	Oversize TRU Waste Size Reduction
OH-F027	Improved Equipment Dismantlement
OH-WV-909	Remote Handled Waste Processing
OH-WV-910	Size Reduction of Components
ORDD-07	Remote Dismantlement Methods
ORDD-09	Improved Non-Thermal Cutting of Process Equipment
RL-DD02	Glove Box Size Reduction System for PFP
RL-DD061	Remote/Robotic Systems for 233-S
RL-DD08	Remote Cutting Technologies for Building 324 and 327
RL-MW02	Remotely Controlled Size and Volume Reduction Techniques for RH MLLW and RH transuranic waste (TRUW)
SR00-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment
SR00-4001	Dismantlement of Large and/or Complex Equipment and Structures

## DDFA Need Technical Responses

**Need ID Number** ID-7.2.31

**Need Title** Remote Demolition of Piping

**Narrative Response to Need** DDFA interpretation of this need is for technologies to remotely cut piping.

**Focus Area** DDFA

**Federal Focus Area POC** Bossart, Steve (304-285-4643)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
Dismantlement Processes Adaptation and Development	969
Dual Arm Work Platform Teleoperated Robotics System	1787
Laser Cutting and Size Reduction	1477
Mega-Tech Hydraulic Shears	2953
Mobile Robot Worksystem (ROSIE)	1799
Mobile Work Platform	2243
Remote Control Concrete Demolition System	2100
Remote/Robotic Size Reduction System	2916
Rocky Flats D&D Initiative - Central Size Reduction Facility	2918
Track Mounted Shear/Crusher	2303

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Dry Size Reduction System (DSRS)	FIU LSDDP TIS
Explosive Cutting Using Linear-Shaped Charges	Dick Meservey
Hydraulic Cutters/Shears	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-01-DD	Size Reduction Technology for TRU Mixed Waste
AL-00-01-07-DD	Ex Situ Glove Box Size Reduction System

## **DDFA Need Technical Responses**

AL-00-01-12-DD	Remote-Handled Size Reduction Technology
AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals
CH-DD01-00	Reduced Emissions Metal Cutting
CH-DD06-99	Size Reduction of Massive Metal Structures
NV07-0001-03	Oversize TRU Waste Size Reduction
OH-F010	Safe and Efficient Process Piping and Conduit Dismantlement
OH-WV-909	Remote Handled Waste Processing
OH-WV-910	Size Reduction of Components
ORDD-07	Remote Dismantlement Methods
ORDD-09	Improved Non-Thermal Cutting of Process Equipment
RL-DD02	Glove Box Size Reduction System for PFP
RL-DD061	Remote/Robotic Systems for 233-S
RL-DD08	Remote Cutting Technologies for Building 324 and 327
RL-MW02	Remotely Controlled Size and Volume Reduction Techniques for RH MLLW and RH transuranic waste (TRUW)
SR00-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment
SR00-4008	Dismantlement of Concrete-Encased Piping

## DDFA Need Technical Responses

<b>Need ID Number</b>	ID-S.2.05
<b>Need Title</b>	Understanding the Physics and Chemistry of Concrete Decontamination
<b>Narrative Response to Need</b>	DDFA interpretation of this science need is for fundamental studies on physical/chemical binding of radionuclides to bare and weathered concrete and painted concrete surfaces. Mesoscale modeling and experiments are needed to characterize flow and percolation of fluids through porous and fractured concrete surfaces. The influence of chemical, mechanical, and biological processes on the physical properties and fracture of concrete require characterization. These data will lead to the development of more efficient chemical and biological processes for decontamination.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	Need to determine whether need is being partially or fully met within existing EMSP projects. Need better understanding of how to break the bonds between concrete and contaminants to develop decontamination technologies (electrical, high-frequency)

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted.

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted.

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### SIMILAR NEEDS

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None identified.

## DDFA Need Technical Responses

<b>Need ID Number</b>	ID-S.2.06
<b>Need Title</b>	Understanding the Physics and Chemistry of Metal Decontamination
<b>Narrative Response to Need</b>	DDFA interpretation of science need is for a better understanding of the fundamental chemistry of adsorption and binding of radioactive isotopes to alloys of interest to decontamination operations. The development of recyclable chelants to minimize secondary waste is an opportunity. The modification of high tech extractant molecules developed to extract radionuclides from solution to operate on surface bonded contaminants. Interaction of contamination with corrosion and oxidation products and organics (e.g., paint and oil) require characterization through surface science studies (secondary ion mass spectrometry, electron microprobe, ESCA, auger, surface Raman, etc.) and solid state chemical modeling. Segregation and trapping of radioactive species at defects (e.g., pores, weldments, or cracks) would also benefit surface science studies and modeling.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	Need to determine whether need is being partially or fully met within existing EMSP projects. Need to better understand bonding mechanism between metal and contaminants to develop better technologies. (e.g., electrochemical, high-frequency, thermal, electrochemical methods could be developed).

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted.

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted.

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### SIMILAR NEEDS

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None identified.

## DDFA Need Technical Responses

<b>Need ID Number</b>	NV07-0001-03
<b>Need Title</b>	Oversize TRU Waste Size Reduction
<b>Narrative Response to Need</b>	A need for a technology to size reduce oversize, nonstandard TRU waste boxes and their contents to fit into standard waste drums or boxes. The TRU waste is in large non-standard shaped boxes, and in some cases the waste box was built around the waste item.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Powell, Jane (304-285-4687)
<b>Additional Comments</b>	This need is being addresses by the current Laser Cutting ASTD at the Nevada Test Site.

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### OST TECHNOLOGIES

Technology Title	Technology ID
Laser Cutting and Size Reduction	1477

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### NON-OST TECHNOLOGIES

No Non-OST technologies have been identified and/or accepted.

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-01-DD	Size Reduction Technology for TRU Mixed Waste
AL-00-01-07-DD	Ex Situ Glove Box Size Reduction System
AL-00-01-12-DD	Remote-Handled Size Reduction Technology
AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals
CH-DD01-00	Reduced Emissions Metal Cutting
CH-DD06-99	Size Reduction of Massive Metal Structures
ID-7.2.12	Cutting Equipment for Large Items in Above Ground or Underground Structures & Underwater
ID-7.2.29	Remote Demolition of Machinery
ID-7.2.30	Remote Demolition of Metal Structures
OH-F027	Improved Equipment Dismantlement
OH-WV-909	Remote Handled Waste Processing



## **DDFA Need Technical Responses**

OH-WV-910	Size Reduction of Components
ORDD-07	Remote Dismantlement Methods
ORDD-09	Improved Non-Thermal Cutting of Process Equipment
RF-DD11	Improved Size Reduction of Contaminated Equipment and Demolition Waste
RL-DD02	Glove Box Size Reduction System for PFP
RL-DD061	Remote/Robotic Systems for 233-S
RL-DD08	Remote Cutting Technologies for Building 324 and 327
RL-MW02	Remotely Controlled Size and Volume Reduction Techniques for RH MLLW and RH transuranic waste (TRUW)
SR00-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment

## DDFA Need Technical Responses

<b>Need ID Number</b>	NV09-0001-09
<b>Need Title</b>	Nonintrusive Surveys in Pipes and Vessels
<b>Narrative Response to Need</b>	A need for a technology to identify and quantify radioactive contaminants and residual material inside pipes and vessels from an exterior side. Identify or quantify contaminants without opening pipes or vessels.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Powell, Jane (304-285-4687)
<b>Additional Comments</b>	None.

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### OST TECHNOLOGIES

Technology Title	Technology ID
Pipe Crawler Internal Piping Characterization System	1810
Pipe Explorer (TM) System	74

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### NON-OST TECHNOLOGIES

No Non-OST technologies have been identified and/or accepted.

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-02-DD	Characterization Technologies for Verifying Presence or Absence of Contamination in Structures Scheduled for D&D
AL-09-01-11-MW	Characterization of Equipment Potentially Contaminated with Alpha Emitting Transuranic (TRU) Radionuclides
ORDD-01	Improved Characterization of Equipment, Machinery, Fabricated Metals & Other Materials
RF-DD01	Improved Pre-D&D Characterization for Distinguishing Between TRU and Low-Level Contamination
RL-DD031	Non-Intrusive Detection of Pipe Contents for 233-S
RL-DD036	General Radiation Surveys of Concrete and Equipment in the Materials Processing Facilities for CDI
RL-DD037	Liquids Detection for CDI
RL-DD038	Liquids Characterization for CDI

## **DDFA Need Technical Responses**

RL-DD039	Solids (Sediment/Sludge/Dust) Characterization for CDI
SR00-4005	Characterization of Inaccessible Areas

## DDFA Need Technical Responses

<b>Need ID Number</b>	NV10-0001-10
<b>Need Title</b>	Improved Detection and Characterization of Radioactive Contamination on Large Concrete and Metal Surfaces
<b>Narrative Response to Need</b>	A need for a technology that provides a cheaper, faster, and/or safer method for characterizing radioactive contamination on large concrete and metal surfaces
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Powell, Jane (304-285-4687)
<b>Additional Comments</b>	This need is being addresses by the current Surface Contamination Monitor/Survey Information Management System ASTD at the Nevada Test Site.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Gamma Cam (TM) Radiation Imaging System	1840
Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)	1942

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
Aladin Gamma Camera	D&D Tech. Notebook
Amandin Surface Counter	D&D Tech. Notebook
Beta Contamination Detector with High Gamma Filtration/Rejection	FIU LSDDP TIS
Integrated Characterization, Decontamination & Decommissioning Demonstration (ICD3)	FIU LSDDP TIS
IonSens 208 Large Item Monitor	D&D Tech. Notebook
NOMAD Plus and MicroNOMAD Portable Spectroscopy Systems	FIU LSDDP TIS
Radiation Detectors	D&D Tech. Notebook

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### SIMILAR NEEDS

<b>Site Need ID</b>	<b>Need Title</b>
AL-00-01-02-DD	Characterization Technologies for Verifying Presence or Absence of Contamination in Structures Scheduled for D&D

## **DDFA Need Technical Responses**

CH-DD11-99	Remote Characterization of In-ground Concrete Structures
ID-7.2.06	Remote Characterization for Building Release, Large Area Surface Soil Characterization, and Characterization of Sumps, Debris, Underwater Areas, and Buried Pipes and Utilities
OH-M901	Improved Facility Survey Techniques
ORDD-01	Improved Characterization of Equipment, Machinery, Fabricated Metals & Other Materials
ORDD-12	Improved Characterization of Buildings and Facilities
RF-DD01	Improved Pre-D&D Characterization for Distinguishing Between TRU and Low-Level Contamination
RF-DD02	High Speed Integrated Characterization System for (1) Radioactive, (2) Hazardous and (3) Toxic Contamination
RL-DD036	General Radiation Surveys of Concrete and Equipment in the Materials Processing Facilities for CDI
RL-DD039	Solids (Sediment/Sludge/Dust) Characterization for CDI
RL-DD05	Characterization of Building 324 and 327
RL-DD061	Remote/Robotic Systems for 233-S
SR00-4002	Characterization of Contaminated Surfaces

## DDFA Need Technical Responses

<b>Need ID Number</b>	OH-C002
<b>Need Title</b>	Decontamination of Mop Heads and Rags to Reduce TRU Waste Volume and Minimize Radioactive Waste DOE Complex Wide
<b>Narrative Response to Need</b>	A technology is needed to decontaminate TRU and LLW contaminated cloth material to 1) minimize waste volumes (specifically TRU waste) requiring disposal, and 2) allow reuse of cloth materials.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Shoemaker, Harold (304-285-4715)
<b>Additional Comments</b>	DDFA will coordinate with the Mixed Waste Focus Area to address innovative solutions for this need. This need is similar to a need proposed by Savannah River for cleaning alpha contaminated laundables.

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted.

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted.

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### SIMILAR NEEDS

<b>Site Need ID</b>	<b>Need Title</b>
SR00-1014	Cleaning of Alpha Contaminated Launderables

## DDFA Need Technical Responses

<b>Need ID Number</b>	OH-C901
<b>Need Title</b>	Robotic Device to Improve Characterization of Underground Pipe Lines
<b>Narrative Response to Need</b>	A robotic device to traverse underground pipe lines for in situ characterization and observation is needed. It must be capable of quantitative or semi-quantitative radioactive isotopic analysis of contamination within and outside the buried drain, and visual observation to assess line integrity. The information obtained must provide sufficient detection sensitivity for release determinations of primary isotopes of concern.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Shoemaker, Harold (304-285-4715)
<b>Additional Comments</b>	A number of OST and Non-OST technologies are available that address this need.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Pipe Crawler Internal Piping Characterization System	1810
Pipe Explorer (TM) System	74
Small Pipe Characterization System (SPCS)	43

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
MicroVGTV	D&D Tech. Notebook
Pipe Walker	FIU LSDDP TIS
Versatrax; Remote Pipe Inspection	D&D Tech. Notebook

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### SIMILAR NEEDS

<b>Site Need ID</b>	<b>Need Title</b>
AL-00-01-02-DD	Characterization Technologies for Verifying Presence or Absence of Contamination in Structures Scheduled for D&D
ID-7.2.06	Remote Characterization for Building Release, Large Area Surface Soil Characterization, and Characterization of Sumps, Debris, Underwater Areas, and Buried Pipes and Utilities

## **DDFA Need Technical Responses**

RL-DD05	Characterization of Building 324 and 327
SR00-4005	Characterization of Inaccessible Areas



## DDFA Need Technical Responses

<b>Need ID Number</b>	OH-F010
<b>Need Title</b>	Safe and Efficient Process Piping and Conduit Dismantlement
<b>Narrative Response to Need</b>	Fernald needs cutting equipment with the capability to hold pipe or conduit, cut it on either side of where it is being held, lower the cut section to ground elevation, and finally place it in a storage/disposal container. This type of activity is necessary during the decommissioning of buildings and structures around the Fernald site.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Shoemaker, Harold (304-285-4715)
<b>Additional Comments</b>	The Fernald Plant 1 Large-Scale Demonstration and Deployment project addressed this specific need and demonstrated a Mobile Work Platform (TMS ID 2243) and an ASTD project for deployment of a Mobile Work Platform also addresses this need

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### OST TECHNOLOGIES

Technology Title	Technology ID
Hand Held Shear	2304
High Speed Clamshell Pipe Cutter	1807
Mega-Tech Hydraulic Shears	2953
Mobile Robot Worksystem (ROSIE)	1799
Mobile Work Platform	2243
Oxy-Gasoline Torch	1847
Remote/Robotic Size Reduction System	2916
Self Contained Pipe Cutting Shear	1948
Size Reduction Machine	2395
Track Mounted Shear/Crusher	2303

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Dry Size Reduction System (DSRS)	FIU LSDDP TIS
Hydraulic Cutters/Shears	D&D Tech. Notebook
Hydraulic Shears	FIU LSDDP TIS

## DDFA Need Technical Responses

LUKAS Rescue Tools - Hydraulic Cutting Shears

D&D Tech. Notebook

Wachs Wheel Cutter

FIU LSDDP TIS

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-05-DD	Alternative Cutting Techniques for Piping
CH-DD06-99	Size Reduction of Massive Metal Structures
ID-7.2.12	Cutting Equipment for Large Items in Above Ground or Underground Structures & Underwater
ID-7.2.31	Remote Demolition of Piping
ORDD-07	Remote Dismantlement Methods
ORDD-09	Improved Non-Thermal Cutting of Process Equipment
RL-DD08	Remote Cutting Technologies for Building 324 and 327
SR00-4008	Dismantlement of Concrete-Encased Piping

## DDFA Need Technical Responses

<b>Need ID Number</b>	OH-F027
<b>Need Title</b>	Improved Equipment Dismantlement
<b>Narrative Response to Need</b>	Fernald needs to improve worker safety and decrease related costs for equipment dismantlement. It is essential to reduce worker exposures to various physical, chemical, radiological, and thermal hazards. It is also necessary to implement methods that reduce costs and improve on existing technologies for equipment dismantlement.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Shoemaker, Harold (304-285-4715)
<b>Additional Comments</b>	

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Diamond Wire Cutting Technology Assessment of Tokamak Fusion Rest Reactor Vacuum Vessel Surrogate	2389
Hand Held Shear	2304
Oxy-Gasoline Torch	1847
Remote Control Concrete Demolition System	2100
Remote/Robotic Size Reduction System	2916
Self Contained Pipe Cutting Shear	1948
Size Reduction Machine	2395
Track Mounted Shear/Crusher	2303

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
Dry Size Reduction System (DSRS)	FIU LSDDP TIS
Hydraulic Cutters/Shears	D&D Tech. Notebook
Integrated Characterization, Decontamination & Decommissioning Demonstration (ICD3)	FIU LSDDP TIS

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-12-DD	Remote-Handled Size Reduction Technology
CH-DD01-00	Reduced Emissions Metal Cutting
CH-DD06-99	Size Reduction of Massive Metal Structures
ID-7.2.12	Cutting Equipment for Large Items in Above Ground or Underground Structures & Underwater
ID-7.2.29	Remote Demolition of Machinery
ID-7.2.30	Remote Demolition of Metal Structures
ORDD-07	Remote Dismantlement Methods
ORDD-09	Improved Non-Thermal Cutting of Process Equipment
RF-DD11	Improved Size Reduction of Contaminated Equipment and Demolition Waste
RL-DD08	Remote Cutting Technologies for Building 324 and 327
SR00-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment
SR00-4001	Dismantlement of Large and/or Complex Equipment and Structures

## DDFA Need Technical Responses

**Need ID Number** OH-F042

**Need Title** Telemetric Monitoring of Heat Stress

**Narrative Response to Need** Fernald needs a telemetric system to monitor physiological indicators of heat stress in individual workers.

**Focus Area** DDFA

**Federal Focus Area POC** Shoemaker, Harold (304-285-4715)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
Heat Stress Monitoring System	1953

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### NON-OST TECHNOLOGIES

No Non-OST technologies have been identified and/or accepted.

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### SIMILAR NEEDS

None identified.

## DDFA Need Technical Responses

<b>Need ID Number</b>	OH-F047
<b>Need Title</b>	Pulverizing Concrete for Site Aggregate Needs
<b>Narrative Response to Need</b>	Fernald needs safe and economical device(s) for pulverizing concrete (pads and building foundations) into aggregate.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Shoemaker, Harold (304-285-4715)
<b>Additional Comments</b>	Fernald is considering use of the Brokk Remote Concrete Demolition System as a means to address this need. However, other more robust, higher capacity commercially available systems are being investigated by Fernald.

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### OST TECHNOLOGIES

Technology Title	Technology ID
Excel Concrete Crusher	2963
Remote Control Concrete Demolition System	2100

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### NON-OST TECHNOLOGIES

No Non-OST technologies have been identified and/or accepted.

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### SIMILAR NEEDS

Site Need ID	Need Title
SR00-4001	Dismantlement of Large and/or Complex Equipment and Structures

## DDFA Need Technical Responses

<b>Need ID Number</b>	OH-M010
<b>Need Title</b>	Tritium Robotics
<b>Narrative Response to Need</b>	This is multi-function robotic need for remote systems to deploy multiple tools and end-effectors for a variety of D&D activities (characterization, decontamination, material disposition) in highly contaminated but insufficiently characterized facility (SW Old Cave).
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Shoemaker, Harold (304-285-4715)
<b>Additional Comments</b>	There are a number of OST developed and non-OST commercially available technologies that may help to satisfy this need.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Dual-Point Impedance Control for Telerobotics	2173
Houdini-II Remotely Operated Vehicle System	2085
Intelligent Inspection and Survey Robot	272
Remotely Operated Scabbling	2099
Robotic Platform for B-Cell Cleanout	2919

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
ARTISAN (heavy duty hydraulic manipulators)	D&D Tech. Notebook
Minescout	D&D Tech. Notebook
MiniTrac & MicroTrac; Remote Operated Crawlers	D&D Tech. Notebook
Mobile Platform, Heavy-Duty, Multiple Manipulator Robot	FIU LSDDP TIS
MURV-100 Teleoperated Robot System	D&D Tech. Notebook
NEATER (Nuclear Engineered Advanced Robots)	D&D Tech. Notebook
Pioneer Robot	D&D Tech. Notebook - ANS Robotics/Remote Systems

## DDFA Need Technical Responses

Portable Articulated Arm Deployment System (PAADS)

D&D Tech. Notebook -  
ANS Robotics/Remote  
Systems

Tele-Operated Crawler System

D&D Tech. Notebook -  
ANS Robotics/Remote  
Systems

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-12-DD	Remote-Handled Size Reduction Technology
CH-DD11-99	Remote Characterization of In-ground Concrete Structures
ID-7.2.08	Robotics for D&D
ID-7.2.19	Remote/Robotic Technologies for Access and Deployment of Characterization & Sampling Tools
ID-7.2.28	Remote Demolition of Concrete Structures
ID-7.2.29	Remote Demolition of Machinery
ID-7.2.30	Remote Demolition of Metal Structures
ID-7.2.31	Remote Demolition of Piping
ORDD-07	Remote Dismantlement Methods
SR00-2031	Develop Remote Technology to Improve DWPF Operations



## DDFA Need Technical Responses

<b>Need ID Number</b>	OH-M011
<b>Need Title</b>	Metal Tritides Air Monitor
<b>Narrative Response to Need</b>	Mound needs a real time air monitoring system for stable metal tritides (SMTs)
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Shoemaker, Harold (304-285-4715)
<b>Additional Comments</b>	No commercial technology is available for real time monitoring of SMTs. DDFA is addressing this need as part of an ongoing project at Mound "Mound Tritium D&D LSDDP". A few options have been developed by the site and the LSDDP project will facilitate demonstration of a viable technology when it becomes available.

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted.

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted.

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### SIMILAR NEEDS

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None identified.

## DDFA Need Technical Responses

**Need ID Number** OH-M901

**Need Title** Improved Facility Survey Techniques

**Narrative Response to Need** Mound needs a technology that will characterize building surfaces and materials and provide real-time results. The technology must be able to detect plutonium-238 and thorium-232 and other relevant radionuclides and be able to distinguish between those radionuclides.

**Focus Area** DDFA

**Federal Focus Area POC** Shoemaker, Harold (304-285-4715)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
Cogema 3-D Gamma Imaging	2302
Direct Reading Tritium Monitor	2310
Field Transportable Beta Spectrometer	1853
Gamma Cam (TM) Radiation Imaging System	1840
Gamma Ray Imaging System	1793
In Situ Object Counting System	2098
Indoor Radiation Mapping Using Laser Assisted Ranging and Data System (LARADS)	1946
Mobile Automated Characterization System	1798
Online Measurement of the Progress of Decontamination	2376
Passive Tritium Air and Surface Monitor	2957
Portable Scintillation Counter	2311
Real-Time Surface Tritium Monitor	2933
Solid State Pin Diode Direct Reading Surface Tritium Detector	2956
Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)	1942

## DDFA Need Technical Responses

### NON-OST TECHNOLOGIES

Technology Title	Data Source
Amandin Surface Counter	D&D Tech. Notebook
NOMAD Plus and MicroNOMAD Portable Spectroscopy Systems	FIU LSDDP TIS
Portable Survey Meters	D&D Tech. Notebook
Radiation Detectors	D&D Tech. Notebook

### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-02-DD	Characterization Technologies for Verifying Presence or Absence of Contamination in Structures Scheduled for D&D
ID-7.2.06	Remote Characterization for Building Release, Large Area Surface Soil Characterization, and Characterization of Sumps, Debris, Underwater Areas, and Buried Pipes and Utilities
NV10-0001-10	Improved Detection and Characterization of Radioactive Contamination on Large Concrete and Metal Surfaces
ORDD-12	Improved Characterization of Buildings and Facilities
RF-DD01	Improved Pre-D&D Characterization for Distinguishing Between TRU and Low-Level Contamination
RF-DD02	High Speed Integrated Characterization System for (1) Radioactive, (2) Hazardous and (3) Toxic Contamination
RL-DD036	General Radiation Surveys of Concrete and Equipment in the Materials Processing Facilities for CDI
RL-DD05	Characterization of Building 324 and 327
SR00-4002	Characterization of Contaminated Surfaces
SR00-4007	Characterization of Volumetrically Contaminated Surfaces

## DDFA Need Technical Responses

<b>Need ID Number</b>	OH-M902
<b>Need Title</b>	Decontamination Techniques for Tritiated Gloveboxes
<b>Narrative Response to Need</b>	Mound needs decontamination technology for tritium contaminated gloveboxes that remove the tritium to a release level where the material can be disposed of as salvage or reduced to a level to minimize the chances of a release or worker contamination.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Shoemaker, Harold (304-285-4715)
<b>Additional Comments</b>	An ongoing project "Mound Tritium D&D LSDDP" is addressing this need. It plans to demonstrate technology(ies) that will address this need in FY 2000.

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### OST TECHNOLOGIES

Technology Title	Technology ID
ALARA 1146 Strippable Coating	2314

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Polyurea Spray Elastomers	D&D Tech. Notebook

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### SIMILAR NEEDS

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None identified.

## DDFA Need Technical Responses

**Need ID Number** OH-M903

**Need Title** Method for Controlling Off-Gassing and Removable Contamination from Tritium Piping

**Narrative Response to Need** Mound needs a method for effectively controlling removable contamination or eliminating off-gassing from tritium process piping during decommissioning.

**Focus Area** DDFA

**Federal Focus Area POC** Shoemaker, Harold (304-285-4715)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
ALARA 1146 Strippable Coating	2314
Pipe Cutting and Crimping System	2955

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Polyurea Spray Elastomers	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-04-DD	Fixation of Airborne and Removable Contamination
AL-07-01-13-DD	Decontamination of Difficult Access Interior Contamination
RL-DD032	Contamination Fixative for 233-S
RL-DD04	TRU Waste Fixatives for PFP
SR00-4012	Stabilization of Contaminated Equipment/Components/Surfaces

## DDFA Need Technical Responses

<b>Need ID Number</b>	OH-M905
<b>Need Title</b>	Treatment of Tritiated Pump Oils and Mercury
<b>Narrative Response to Need</b>	A method for decontaminating and disposing of the tritiated pump oils is needed at Mound. The current method is to remove the oil and store it as mixed waste at the RCRA permitted facility on site.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Shoemaker, Harold (304-285-4715)
<b>Additional Comments</b>	Following a successful demonstration of the NOCHAR in FY 1999, the problem of tritiated pump oils has been solved.

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### OST TECHNOLOGIES

Technology Title	Technology ID
Oil Solidification	2313

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### NON-OST TECHNOLOGIES

No Non-OST technologies have been identified and/or accepted.

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-09-DD	Method for Decontaminating and Disposing of Tritium-Contaminated Pump Oil
CH-MW07-99	Stabilization of Tritium Organic Waste

## DDFA Need Technical Responses

<b>Need ID Number</b>	OH-M909
<b>Need Title</b>	Automated Dust Supression System
<b>Narrative Response to Need</b>	Mound needs an effective method to minimize dust during decommissioning operations.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Shoemaker, Harold (304-285-4715)
<b>Additional Comments</b>	The LSDDP project "Mound Tritium D&D LSDDP" is addressing this need and will demonstrate a suitable technology in FY 2000 or 2001.

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### OST TECHNOLOGIES

Technology Title	Technology ID
Concrete Dust Suppression System	2154

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Aerosol Fog System	FIU LSDDP TIS
Passive Aerosol Generator (PAG)	FIU LSDDP TIS

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### SIMILAR NEEDS

Site Need ID	Need Title
RF-DD17	Improved Dust Control Methods During Building Demolition for Structures that are not Free Releasable

## DDFA Need Technical Responses

<b>Need ID Number</b>	OH-WV-901
<b>Need Title</b>	Characterization of Low Level and Transuranic Waste
<b>Narrative Response to Need</b>	West Valley seeks technologies to characterized packaged waste to determine between TRU and Low Level waste. The waste is currently stored in drums and boxes.
<b>Focus Area</b>	MWFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	In addition to the OST and Non-OST technologies listed, DDFA supports the demonstration and deployment of systems to characterize TRU material waste streams prior to packaging. Information regarding these systems, either developed by OST or available commercially, is available upon request. DDFA supports both LSDDPs and ASTD at LANL, Rocky Flats, and the Nevada Test Site through Work Package DD12, which directly supports the disposition of TRU materials and equipment, including materials currently stored in drums and boxes.

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### OST TECHNOLOGIES

Technology Title	Technology ID
Mobile Characterization System for Large Crates	2959
Standard Waste Box Crate Counter	2917
Vehicle and Cargo Inspection System (VACIS)	2912

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
DrumScan Modular Segmented Gamma Scanner	D&D Tech. Notebook
IPAN/GEA (imaging passive-active neutron/gamma energy assay) Crate System	D&D Tech. Notebook
IPAN/GEA (imaging passive-active neutron/gamma energy assay) Drum System	D&D Tech. Notebook
Waste Assay Systems	D&D Tech. Notebook



## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-08-DD	Segregation Technology to Separate TRU and Non-TRU and Low Level and Free Release Waste
AL-00-01-11-DD	Increased Efficiency Waste Characterization Assay Methods
AL-07-01-14-MW	Characterization and Segregation of TRU Waste Now Stored in Fiberglass Reinforced Plywood Boxes LANL
AL-08-01-17-MW	Certiifiability of Newly Generated TRU Waste
OK99-06	Mobile Non-Destructive Assay for TRU Waste Boxes
RF-DD01	Improved Pre-D&D Characterization for Distinguishing Between TRU and Low-Level Contamination
RL-DD035-S	Neutron Detection for Sorting Remote-Handled Radioactive Waste into TRU vs Non-TRU
RL-DD060	Characterization for Waste Handling, Packaging and Processing for 233-S
SR00-4011	Waste Characterization

## DDFA Need Technical Responses

<b>Need ID Number</b>	OH-WV-902
<b>Need Title</b>	Decontamination of HLW Canisters
<b>Narrative Response to Need</b>	West Valley seeks an innovative, cost-effective method to decontaminate the outside surface of the HLW vitrification canisters prior to offsite shipment. The preferred solution should generate minimal secondary waste that is easily managed. The preferred system should also be remotely operated.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	DDFA is supporting efforts in FY00 to demonstrate a soft-media blasting system developed by AEA Technologies to decontaminate HLW vitrification canisters at Savannah River. West Valley has indicated that this technology does not meet their functional requirements. FIU is supporting efforts in FY00 to identify and assess potential solutions for canister decon at SRS and West Valley.

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### OST TECHNOLOGIES

Technology Title	Technology ID
Laser Surface Cleaning	32
Steam Vacuum Cleaning	1780

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
CO2 Pellet Cleaning	D&D Tech. Notebook
High Pressure Waterjet Decon	FIU-TIS
Laser	FIU LSDDP TIS
Laser ZAWCAD	FIU LSDDP TIS
RADCON LASER (ERASER)	FIU LSDDP TIS

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### SIMILAR NEEDS

Site Need ID	Need Title
SR00-2029	Alternate DWPF Canister Decon Technology

## DDFA Need Technical Responses

<b>Need ID Number</b>	OH-WV-903
<b>Need Title</b>	Vitrification Expended Material Processing
<b>Narrative Response to Need</b>	<p>West Valley seeks next generation integrated tooling to size reduce, decontaminate, segregate and package contaminated material and equipment generated during the vitrification of HLW. These expended materials are contained within the Vitrification Expended Material Processing facility. Improved systems require remote application due to the high radiation. This need is similar in scope to OH-WV-909 "Remote Handled Waste Processing." This need however, concentrates on remotely deployed end-effectors rather than the deployment platforms themselves. DDFA response to this need concentrates on the remote size reduction end-effectors and integrated platform/end-effector systems. The response to OH-WV-909 provides greater detail on remote technologies for characterization and decontamination of contaminated materials and equipment.</p>
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	<p>Though last year considered not to meet the WV need, the Dual Arm Work Platform may provide considerable remote flexibility to accomplish a number of the site's size reduction and packaging requirements. The relevant D&amp;D Work Package for conducting technology development, demonstration and deployment activities is DD15 "Storage and Treatment Facility D&amp;D." This work package will leverage extensively with the Robotics Crosscut Program to adapt and develop innovative remote systems for the D&amp;D of contaminated equipment and materials. A key component of the RBX work may be derived from the new Robotic Intelligent Machines (RIM) initiative. This activity will concentrate on break-through advances in the use of robotic/remote systems within EM. Activities in support of other D&amp;D work packages, such as DD12 "D&amp;D of Weapons Component Fabrication Facilities," also rely heavily on the development and deployment of remote/robotic systems including remote characterization, decontamination, and size reduction systems for TRU materials. The work conducted under this work package over the next two years should provide direct benefit to West Valley. Beginning in FY01, DDFA will support an industry-wide assessment of remote/robotic end-effectors (particularly remote survey sensors and decontamination tools) to determine availability, performance capabilities, and applicability (ability to integrate) with remote manipulator arm systems.</p>

## DDFA Need Technical Responses

### OST TECHNOLOGIES

Technology Title	Technology ID
High Speed Clamshell Pipe Cutter	1807
Mega-Tech Hydraulic Shears	2953
Robotic Platform for B-Cell Cleanout	2919

### NON-OST TECHNOLOGIES

Technology Title	Data Source
Champion Shears	LSDDP (SRS)
Dry Size Reduction System (DSRS)	FIU LSDDP TIS
Hydraulic Cutters/Shears	D&D Tech. Notebook

### SIMILAR NEEDS

Site Need ID	Need Title
ID-7.2.08	Robotics for D&D
ID-7.2.29	Remote Demolition of Machinery
ID-7.2.31	Remote Demolition of Piping
RL-DD010	Radiation Hardened Robotics for Building 324
RL-DD061	Remote/Robotic Systems for 233-S
RL-MW02	Remotely Controlled Size and Volume Reduction Techniques for RH MLLW and RH transuranic waste (TRUW)
SR00-2031	Develop Remote Technology to Improve DWPF Operations
SR00-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment

## DDFA Need Technical Responses

<b>Need ID Number</b>	OH-WV-908
<b>Need Title</b>	Decontamination of High-Level Waste Contaminated Equipment
<b>Narrative Response to Need</b>	West Valley seeks innovative decontamination techniques for highly contaminated metal equipment surfaces. The improved systems should be applicable to remote deployment and be able to decontaminate complex geometries.
<b>Focus Area</b>	TFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	Chemical bath processes (e.g., Corpex and TechXtract) may be the best alternative to address many of the complex geometries (e.g., pumps) needing decontamination. These chemical bath technologies could be coupled with improve liquid treatment systems, such as the 3M Empore or TRUEX/SREX technologies to reduce the volume of waste generated from the bath process.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
High Productivity Vacuum Blasting	2224
Soda Blasting Decontamination Process	369
Steam Vacuum Cleaning	1780

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
CO2 Pellet Cleaning	D&D Tech. Notebook
Coating Softening Process (CO2 Blasting)	FIU LSDDP TIS
High Pressure Decon Booths	D&D Tech. Notebook
High Pressure Waterjet Decon	FIU-TIS
Sivablast System	D&D Tech. Notebook - ANS Robotics/Remote Systems

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals
RL-DD063	Decontamination of Transuranic Debris for 233-S
RL-MW04	Remote Decontamination of RH TRUW Debris to Support Reclassification into Non-TRUW Category
SR00-4015	Decontamination of Small Components

## DDFA Need Technical Responses

<b>Need ID Number</b>	OH-WV-909
<b>Need Title</b>	Remote Handled Waste Processing
<b>Narrative Response to Need</b>	West Valley seeks next generation integrated tooling to size reduce, decontaminate, segregate and package highly radioactive material and equipment generated during the processing of HLW. This need is similar in scope to OH-WV-903 for the Vitrification Expanded Material Processing facility. Improved systems require remote application due to the high radiation.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	Remote size reduction end effector technologies and integrated systems identified for OH-WV-903 also apply to this need. The DDFA response to OH-WV-909 includes additional technologies for characterization, decontamination, as well as technologies to assist in material segregation and packaging, which could also apply to OH-WV-903. The relevant D&D Work Package for conducting technology development, demonstration and deployment activities is DD15 "Storage and Treatment Facility D&D." This work package will leverage extensively with the Robotics Crosscut Program to adapt and develop innovative remote systems for the D&D of contaminated equipment and materials. A key component of the RBX work may be derived from the new Robotic Intelligent Machines (RIM) initiative. This activity will concentrate on break-through advances in the use of robotic/remote systems within EM. Activities in support of other D&D work packages, such as DD12 "D&D of Weapons Component Fabrication Facilities," also rely heavily on the development and deployment of remote/robotic systems including remote characterization, decontamination, and size reduction systems for TRU materials. The work conducted under this work package over the next two years should provide direct benefit to West Valley.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Decommissioning In-Situ Plutonium Inventory Monitor (DISPIM)	2241
Decontamination and Volume Reduction System (DVRS)	2242
Dismantlement Processes Adaptation and Development	969
Dual Arm Work Platform Teleoperated Robotics System	1787

## DDFA Need Technical Responses

Dual-Point Impedance Control for Telerobotics	2173
High Speed Clamshell Pipe Cutter	1807
Laser Cutting and Size Reduction	1477
Long Range Alpha Detection for Component Monitoring	2382
Mega-Tech Hydraulic Shears	2953
Operator Interface for Robotic Applications	281
Remote/Robotic Size Reduction System	2916
Robotic Platform for B-Cell Cleanout	2919
Rocky Flats D&D Initiative - Central Size Reduction Facility	2918
Size Reduction Machine	2395

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Champion Shears	LSDDP (SRS)
Dry Size Reduction System (DSRS)	FIU LSDDP TIS
Hydraulic Cutters/Shears	D&D Tech. Notebook
Integrated Characterization, Decontamination & Decommissioning Demonstration (ICD3)	FIU LSDDP TIS
Ionization Chambers	D&D Tech. Notebook
IonSens 208 Large Item Monitor	D&D Tech. Notebook
IonSens Conveyor Monitor	D&D Tech. Notebook
TRU Piece Monitor	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-01-DD	Size Reduction Technology for TRU Mixed Waste
AL-00-01-08-DD	Segregation Technology to Separate TRU and Non-TRU and Low Level and Free Release Waste
AL-00-01-12-DD	Remote-Handled Size Reduction Technology
AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals



## **DDFA Need Technical Responses**

CH-DD01-00	Reduced Emissions Metal Cutting
ID-7.2.08	Robotics for D&D
ID-7.2.29	Remote Demolition of Machinery
ID-7.2.31	Remote Demolition of Piping
NV07-0001-03	Oversize TRU Waste Size Reduction
ORDD-01	Improved Characterization of Equipment, Machinery, Fabricated Metals & Other Materials
ORDD-07	Remote Dismantlement Methods
ORDD-09	Improved Non-Thermal Cutting of Process Equipment
RF-DD10	Improve Decontamination of Non-Porous Building Property and Structures
RL-DD010	Radiation Hardened Robotics for Building 324
RL-DD060	Characterization for Waste Handling, Packaging and Processing for 233-S
RL-DD061	Remote/Robotic Systems for 233-S
RL-DD08	Remote Cutting Technologies for Building 324 and 327
RL-MW02	Remotely Controlled Size and Volume Reduction Techniques for RH MLLW and RH transuranic waste (TRUW)
RL-MW04	Remote Decontamination of RH TRUW Debris to Support Reclassification into Non-TRUW Category
SR00-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment

## DDFA Need Technical Responses

<b>Need ID Number</b>	OH-WV-910
<b>Need Title</b>	Size Reduction of Components
<b>Narrative Response to Need</b>	This need focuses on improved size reduction methods for both contact and remote handled equipment and waste. This need is related to OH-WV-903 and OH-WV-909, though these two needs look to remote integrated systems that include, in addition to size reduction, characterization, decontamination, segregation, and packaging technologies.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	The relevant D&D Work Package for conducting technology development, demonstration and deployment activities is DD15 "Storage and Treatment Facility D&D." This work package will leverage extensively with the Robotics Crosscut Program to adapt and develop innovative remote systems for the D&D of contaminated equipment and materials. A key component of the RBX work may be derived from the new Robotic Intelligent Machines (RIM) initiative. This activity will concentrate on break-through advances in the use of robotic/remote systems within EM. Activities in support of other D&D work packages, such as DD12 "D&D of Weapons Component Fabrication Facilities," also rely heavily on the development and deployment of remote/robotic systems including size reduction systems for TRU materials. The work conducted under this work package over the next two years should provide direct benefit to West Valley.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Decontamination and Volume Reduction System (DVRS)	2242
Diamond Wire Cutting Technology Assessment of Tokamak Fusion Rest Reactor Vacuum Vessel Surrogate	2389
Dismantlement Processes Adaptation and Development	969
Dual Arm Work Platform Teleoperated Robotics System	1787
Hand Held Shear	2304
High Speed Clamshell Pipe Cutter	1807
Laser Cutting and Size Reduction	1477

## DDFA Need Technical Responses

Mega-Tech Hydraulic Shears	2953
Oxy-Gasoline Torch	1847
Pipe Cutting and Crimping System	2955
Remote/Robotic Size Reduction System	2916
Robotic Platform for B-Cell Cleanout	2919
Rocky Flats D&D Initiative - Central Size Reduction Facility	2918
Self Contained Pipe Cutting Shear	1948
Size Reduction Machine	2395

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Arc Saw	FIU LSDDP TIS
Champion Shears	LSDDP (SRS)
Dry Size Reduction System (DSRS)	FIU LSDDP TIS
Hydraulic Cutters/Shears	D&D Tech. Notebook
Hydraulic Shears	FIU LSDDP TIS
Integrated Characterization, Decontamination & Decommissioning Demonstration (ICD3)	FIU LSDDP TIS
LUKAS Rescue Tools - Hydraulic Cutting Shears	D&D Tech. Notebook
Pipe Crimper	FIU LSDDP TIS
Wachs Wheel Cutter	FIU LSDDP TIS

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-01-DD	Size Reduction Technology for TRU Mixed Waste
AL-00-01-05-DD	Alternative Cutting Techniques for Piping
AL-00-01-07-DD	Ex Situ Glove Box Size Reduction System
AL-00-01-12-DD	Remote-Handled Size Reduction Technology
AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals

## **DDFA Need Technical Responses**

CH-DD01-00	Reduced Emissions Metal Cutting
CH-DD06-99	Size Reduction of Massive Metal Structures
ID-7.2.29	Remote Demolition of Machinery
ID-7.2.30	Remote Demolition of Metal Structures
ID-7.2.31	Remote Demolition of Piping
NV07-0001-03	Oversize TRU Waste Size Reduction
ORDD-07	Remote Dismantlement Methods
ORDD-09	Improved Non-Thermal Cutting of Process Equipment
RF-DD11	Improved Size Reduction of Contaminated Equipment and Demolition Waste
RL-DD02	Glove Box Size Reduction System for PFP
RL-DD030	Cutting Plutonium Contaminated Pipe for 233-S
RL-DD061	Remote/Robotic Systems for 233-S
RL-DD08	Remote Cutting Technologies for Building 324 and 327
RL-MW02	Remotely Controlled Size and Volume Reduction Techniques for RH MLLW and RH transuranic waste (TRUW)
SR00-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment

## DDFA Need Technical Responses

<b>Need ID Number</b>	OH-WV-913
<b>Need Title</b>	Far-Field Radioactivity Measurement
<b>Narrative Response to Need</b>	West Valley seeks improved remote systems to provide real-time characterization of contaminated materials, equipment and structures. The technology must be able to characterize between TRU and non-TRU contaminated materials and equipment, as well as discriminate between low energy emitters, such as U and Pu, and high energy fission isotopes such as Cs and Sr.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	DDFA supports a number of activities that may lead to viable solutions for this West Valley characterization need. Past LSDDP and ASTD activities have demonstrated, and subsequently deployed, a variety of remote system for facility, equipment, and waste characterization. Ongoing projects at RFETS and LANL are addressing TRU material disposition and should provide characterization tools that will partially or fully meet this need.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
3-D Visual and Gamma Ray Imaging System (Gamma Modeler)	2402
Gamma Cam (TM) Radiation Imaging System	1840
Gamma Ray Imaging System	1793
In Situ Object Counting System	2098

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
Aladin Gamma Camera	D&D Tech. Notebook
Amandin Surface Counter	D&D Tech. Notebook
Large Area Survey Monitor	D&D Tech. Notebook

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-08-DD	Segregation Technology to Separate TRU and Non-TRU and Low Level and Free Release Waste
AL-09-01-11-MW	Characterization of Equipment Potentially Contaminated with Alpha Emitting Transuranic (TRU) Radionuclides
ORDD-01	Improved Characterization of Equipment, Machinery, Fabricated Metals & Other Materials
RF-DD01	Improved Pre-D&D Characterization for Distinguishing Between TRU and Low-Level Contamination
RF-DD02	High Speed Integrated Characterization System for (1) Radioactive, (2) Hazardous and (3) Toxic Contamination
RL-DD035-S	Neutron Detection for Sorting Remote-Handled Radioactive Waste into TRU vs Non-TRU
RL-DD036	General Radiation Surveys of Concrete and Equipment in the Materials Processing Facilities for CDI
SR00-4002	Characterization of Contaminated Surfaces

## DDFA Need Technical Responses

<b>Need ID Number</b>	OK99-06
<b>Need Title</b>	Mobile Non-Destructive Assay for TRU Waste Boxes
<b>Narrative Response to Need</b>	LLNL, like many of DOE's sites that contain TRU waste, requires certifiable means to assay materials in inventory in waste boxes (and drums and crates). The preferred system must be mobile and demonstrate WIPP Certificate of Compliance.
<b>Focus Area</b>	MWFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	DDFA supports efforts through its Work Package DD-12 for the development and demonstration of TRU assay systems for waste boxes. LANL is developing a mobile standard waste box counter for use at LANL and Rocky Flats. In addition there are commercially available systems, including mobile systems, which are capable of assaying to WIPP requirements. The critical issue for LLNL appears to be a lack of funds necessary to purchase a system for use at the site. DDFA proposes supporting the development of a joint ASTD proposal with LLNL and the MWFA to assist in securing a system that meets LLNL requirements.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Mobile Characterization System for Large Crates	2959
Standard Waste Box Crate Counter	2917
Vehicle and Cargo Inspection System (VACIS)	2912

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
IPAN/GEA (imaging passive-active neutron/gamma energy assay) Crate System	D&D Tech. Notebook
Waste Assay Systems	D&D Tech. Notebook

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-11-DD	Increased Efficiency Waste Characterization Assay Methods
AL-07-01-14-MW	Characterization and Segregation of TRU Waste Now Stored in Fiberglass Reinforced Plywood Boxes LANL
OH-WV-901	Characterization of Low Level and Transuranic Waste
RF-DD01	Improved Pre-D&D Characterization for Distinguishing Between TRU and Low-Level Contamination



## DDFA Need Technical Responses

<b>Need ID Number</b>	OK99-23
<b>Need Title</b>	Field Surveillance Device for Detection of Radium-226 at Very Low Levels
<b>Narrative Response to Need</b>	LEHR requires a field-deployable device to conduct below ground (down to 2 feet) radium-226 to background levels as low as 0.6 to 0.8 picocuries/gram.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Bossart, Steve (304-285-4643)
<b>Additional Comments</b>	This need is functionally a SCFA need rather than a DDFA need. SCFA has been asked to coordinate a response to LEHR for this need. DDFA does support sampling tools for soils below concrete slabs. Should LEHR require such devices, DDFA will assist in identification and/or development and demonstration of such devices.

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted.

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted.

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### SIMILAR NEEDS

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None identified.

## DDFA Need Technical Responses

<b>Need ID Number</b>	ORDD-01
<b>Need Title</b>	Improved Characterization of Equipment, Machinery, Fabricated Metals & Other Materials
<b>Narrative Response to Need</b>	This is a general characterization need for contaminated equipment, machinery, fabricated metals and other materials to enable decontamination and decommissioning (D&D) crews to determine which contaminants are present and at what levels. The system needs to be real-time to guide decontamination efforts, sensitive enough to allow unrestricted release, and non-labor intensive.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Shoemaker, Harold (304-285-4715)
<b>Additional Comments</b>	A number of OST-developed and commercially available technologies are available that may address this need in part. These technologies may not be able address all the conditions outlined in this need. Some targeted R&D may be required to address project specific need for which no technology is available.

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### OST TECHNOLOGIES

Technology Title	Technology ID
Associated Particle Imaging Development	413
Pipe Explorer (TM) System	74
Portable X-Ray Fluorescence Spectrometer	1790

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Aladin Gamma Camera	D&D Tech. Notebook
Amandin Surface Counter	D&D Tech. Notebook
Beta Contamination Detector with High Gamma Filtration/Rejection	FIU LSDDP TIS
Integrated Characterization, Decontamination & Decommissioning Demonstration (ICD3)	FIU LSDDP TIS
IonSens 208 Large Item Monitor	D&D Tech. Notebook

## DDFA Need Technical Responses

NOMAD Plus and MicroNOMAD Portable Spectroscopy Systems	FIU LSDDP TIS
Pipe Walker	FIU LSDDP TIS
Portable Survey Meters	D&D Tech. Notebook
Radiation Detectors	D&D Tech. Notebook
Versatrax; Remote Pipe Inspection	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-02-DD	Characterization Technologies for Verifying Presence or Absence of Contamination in Structures Scheduled for D&D
AL-09-01-11-MW	Characterization of Equipment Potentially Contaminated with Alpha Emitting Transuranic (TRU) Radionuclides
ID-7.2.06	Remote Characterization for Building Release, Large Area Surface Soil Characterization, and Characterization of Sumps, Debris, Underwater Areas, and Buried Pipes and Utilities
NV09-0001-09	Nonintrusive Surveys in Pipes and Vessels
NV10-0001-10	Improved Detection and Characterization of Radioactive Contamination on Large Concrete and Metal Surfaces
OH-M901	Improved Facility Survey Techniques
RF-DD01	Improved Pre-D&D Characterization for Distinguishing Between TRU and Low-Level Contamination
RL-DD036	General Radiation Surveys of Concrete and Equipment in the Materials Processing Facilities for CDI
RL-DD05	Characterization of Building 324 and 327
SR00-4002	Characterization of Contaminated Surfaces
SR00-4005	Characterization of Inaccessible Areas

## DDFA Need Technical Responses

<b>Need ID Number</b>	ORDD-02
<b>Need Title</b>	Improved Decontamination of Equipment, Machinery, Fabricated Metals & Other Materials
<b>Narrative Response to Need</b>	This is a general need for improved processes for decontamination of surfaces of equipment, machinery, scrap metals and other materials to facilitate final disposition.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Shoemaker, Harold (304-285-4715)
<b>Additional Comments</b>	A number of OST-developed and non-OST technologies are available that address this need.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Decontamination and Conversion of Nickel Radioactive Scrap Metal	234
Ex-Situ Large Bore Pipe Decontamination and Characterization System	2375
Gas Phase Decontamination Process for Gaseous Diffusion Equipment	88
Nukem Copper Recycle System	2958
Removal of Contaminants from Equipment and Debris, and Waste Minimization Using TECHXTRACT	1450
SEG Recycle and Reuse of Radioactively Contaminated Scrap Metal	1595
Soda Blasting Decontamination Process	369
Soft Media Blast Cleaning	1899
Stainless Steel Beneficial Reuse	80
Steam Vacuum Cleaning	1780

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
Laser ZAWCAD	FIU LSDDP TIS
Mobile Decon Systems (super-heated water, abrasive blasting, or mechanical rotary systems)	D&D Tech. Notebook
Mobile Decontamination Facility	D&D Tech. Notebook
RADCON LASER (ERASER)	FIU LSDDP TIS

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-07-01-12-DD	Decontaminate and Decommission Radioactively Contaminated Facilities
AL-07-01-13-DD	Decontamination of Difficult Access Interior Contamination
AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals
ID-7.2.24	Decontamination of Metal Debris
ID-7.2.25	Decontamination of Metal Pipes
ID-7.2.26	Decontamination of Metal Walls, Floors, Ceilings, and Corners
RF-DD10	Improve Decontamination of Non-Porous Building Property and Structures
RL-DD021	Metal Decontamination and Recycling for the D&D Program
RL-DD06	Decontamination of Building 324 and 327
SR00-4003	Material Recycle (Process Equipment, Metal, Steel, and Concrete)

## DDFA Need Technical Responses

**Need ID Number** ORDD-03

**Need Title** Improved Decontamination of Facility Concrete and Painted Surfaces

**Narrative Response to Need** This a general need for cost-effective technologies and techniques for decontamination of concrete and painted surfaces associated with D&D activities at Oak Ridge facilities

**Focus Area** DDFA

**Federal Focus Area POC** Shoemaker, Harold (304-285-4715)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
2-D Linear Motion System (Wall Walker)	1476
Advanced Recyclable Media System	1971
Centrifugal Shot Blast System	1851
Concrete Grinder	2102
Concrete Shaver	1950
Concrete Spaller	2152
High Productivity Vacuum Blasting	2224
Integrated Vertical and Overhead Decontamination System	2378
Paint Scaler	2952
Remotely Operated Scabbling	2099
Rotary Peening with Captive Shot	1812

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Betonamist	FIU LSDDP TIS
Cavity Plus Decon System	D&D Tech. Notebook
CO2 Pellet Cleaning	D&D Tech. Notebook
En-Vac Robotic Climber	FIU LSDDP TIS
Horizontal Surface Shot Blaster (EBE 350)	D&D Tech. Notebook

## DDFA Need Technical Responses

KSI Tentacle Manipulator	FIU LSDDP TIS
Milling	FIU LSDDP TIS
Robotic Climber	FIU LSDDP TIS
Sivablast System	D&D Tech. Notebook - ANS Robotics/Remote Systems
Vertical Surface Shot Blaster (EBE 250 VHC)	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-06-DD	Effective Decontamination of Concrete
AL-07-01-12-DD	Decontaminate and Decommission Radioactively Contaminated Facilities
CH-DD07-99	Decontamination of Fixed Surface Contamination of Concrete (thin layer removal)
CH-DD08-99	Remote Decontamination of In-ground Concrete Structures
ID-7.2.03	Decontamination of Concrete Walls, Floors, Ceilings, and Corners
RF-DD09	Improved Decontamination of Porous Surfaces in Preparation for Building Demolition
SR00-4004	Decontamination of Contaminated Concrete

## DDFA Need Technical Responses

**Need ID Number** ORDD-06

**Need Title** Improved Remote Decontamination Methods

**Narrative Response to Need** Oak Ridge needs improved technology(ies) for the remote decontamination of highly contaminated areas such as hot cells, and reactor areas. These technology(ies) or technique(s) is(are) needed to reduce worker exposure and to make these decontamination operations more cost-effective. The technology(ies)/system(s) desired is(are) fully self-contained robotic decontamination system(s) capable of navigating in complex surroundings, using multiple decontamination techniques resulting in overall improvements in worker safety, secondary waste generation, productivity, etc.

**Focus Area** DDFA

**Federal Focus Area POC** Shoemaker, Harold (304-285-4715)

**Additional Comments**

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted.

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
En-Vac Robotic Climber	FIU LSDDP TIS
Robotic Climber	FIU LSDDP TIS
Vertical Surface Shot Blaster (EBE 250 VHC)	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-06-DD	Effective Decontamination of Concrete
AL-07-01-12-DD	Decontaminate and Decommission Radioactively Contaminated Facilities
CH-DD07-99	Decontamination of Fixed Surface Contamination of Concrete (thin layer removal)
CH-DD08-99	Remote Decontamination of In-ground Concrete Structures
ID-7.2.03	Decontamination of Concrete Walls, Floors, Ceilings, and Corners
RF-DD09	Improved Decontamination of Porous Surfaces in Preparation for Building Demolition



## **DDFA Need Technical Responses**

RL-DD06	Decontamination of Building 324 and 327
RL-DD061	Remote/Robotic Systems for 233-S
SR00-4004	Decontamination of Contaminated Concrete

## DDFA Need Technical Responses

**Need ID Number** ORDD-07

**Need Title** Remote Dismantlement Methods

**Narrative Response to Need** This is a need for remote dismantlement of highly contaminated areas such as hot cells and reactor areas to reduce worker exposure and to make these dismantlement operations more cost-effective. The system desired system would be a fully self-contained robotic system capable of navigating in complex surroundings, using multiple mechanical operations for dismantlement, including cutting, prying, unbolting, lifting, and other techniques, and assessing the effectiveness of the dismantlement operations as it proceeds. Real-time feedback to the operator is desired and the ability to alternate procedures or processes is desirable. The system must contain visual and other sensor capability to monitor the dismantling processes as they proceed.

**Focus Area** DDFA

**Federal Focus Area POC** Shoemaker, Harold (304-285-4715)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
Mobile Robot Worksystem (ROSIE)	1799
Mobile Work Platform	2243
Remote Control Concrete Demolition System	2100
Remote/Robotic Size Reduction System	2916
Rocky Flats D&D Initiative - Central Size Reduction Facility	2918
Track Mounted Shear/Crusher	2303

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Dry Size Reduction System (DSRS)	FIU LSDDP TIS
Hydraulic Cutters/Shears	D&D Tech. Notebook

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-01-DD	Size Reduction Technology for TRU Mixed Waste
AL-00-01-07-DD	Ex Situ Glove Box Size Reduction System
AL-00-01-12-DD	Remote-Handled Size Reduction Technology
AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals
CH-DD01-00	Reduced Emissions Metal Cutting
ID-7.2.12	Cutting Equipment for Large Items in Above Ground or Underground Structures & Underwater
ID-7.2.29	Remote Demolition of Machinery
ID-7.2.30	Remote Demolition of Metal Structures
ID-7.2.31	Remote Demolition of Piping
NV07-0001-03	Oversize TRU Waste Size Reduction
OH-F010	Safe and Efficient Process Piping and Conduit Dismantlement
OH-F027	Improved Equipment Dismantlement
OH-WV-910	Size Reduction of Components
RF-DD20	Characterization and Removal of Large Contaminated Equipment Entombed in Concrete
RL-DD02	Glove Box Size Reduction System for PFP
RL-DD061	Remote/Robotic Systems for 233-S
RL-DD08	Remote Cutting Technologies for Building 324 and 327
RL-MW02	Remotely Controlled Size and Volume Reduction Techniques for RH MLLW and RH transuranic waste (TRUW)
SR00-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment
SR00-4001	Dismantlement of Large and/or Complex Equipment and Structures

## DDFA Need Technical Responses

<b>Need ID Number</b>	ORDD-08
<b>Need Title</b>	Mercury Removal from Metal and Porous Surfaces
<b>Narrative Response to Need</b>	Oak Ridge needs a technology to remove mercury from metals (Ni, Al, Cu, Fe) and porous surfaces (concrete, clay tiles, etc.)
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Shoemaker, Harold (304-285-4715)
<b>Additional Comments</b>	Pool of available technologies is very limited. To address this need, D&D Focus Area will conduct a thorough research of commercially available technologies and if no technology is available, will propose this project in FY 2002 for R&D.

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted.

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted.

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### SIMILAR NEEDS

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None identified.

## DDFA Need Technical Responses

<b>Need ID Number</b>	ORDD-09
<b>Need Title</b>	Improved Non-Thermal Cutting of Process Equipment
<b>Narrative Response to Need</b>	This is a need for improved non-thermal cutting methods to enable decontamination and decommissioning (D&D) crews to quickly and efficiently cut and size reduce radioactive or mercury contaminated process equipment while avoiding volatilization of the contaminant during the cutting process.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Shoemaker, Harold (304-285-4715)
<b>Additional Comments</b>	

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### OST TECHNOLOGIES

Technology Title	Technology ID
Hand Held Shear	2304
High Speed Clamshell Pipe Cutter	1807
Pipe Cutting and Crimping System	2955
Remote/Robotic Size Reduction System	2916
Rocky Flats D&D Initiative - Central Size Reduction Facility	2918
Self Contained Pipe Cutting Shear	1948

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Dry Size Reduction System (DSRS)	FIU LSDDP TIS
Hydraulic Cutters/Shears	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-01-DD	Size Reduction Technology for TRU Mixed Waste
AL-00-01-07-DD	Ex Situ Glove Box Size Reduction System
AL-00-01-12-DD	Remote-Handled Size Reduction Technology
AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals
CH-DD01-00	Reduced Emissions Metal Cutting

## **DDFA Need Technical Responses**

CH-DD06-99	Size Reduction of Massive Metal Structures
ID-7.2.12	Cutting Equipment for Large Items in Above Ground or Underground Structures & Underwater
ID-7.2.29	Remote Demolition of Machinery
ID-7.2.30	Remote Demolition of Metal Structures
ID-7.2.31	Remote Demolition of Piping
NV07-0001-03	Oversize TRU Waste Size Reduction
OH-F010	Safe and Efficient Process Piping and Conduit Dismantlement
OH-F027	Improved Equipment Dismantlement
OH-WV-910	Size Reduction of Components
RL-DD02	Glove Box Size Reduction System for PFP
RL-DD061	Remote/Robotic Systems for 233-S
RL-DD08	Remote Cutting Technologies for Building 324 and 327
RL-MW02	Remotely Controlled Size and Volume Reduction Techniques for RH MLLW and RH transuranic waste (TRUW)
SR00-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment
SR00-4001	Dismantlement of Large and/or Complex Equipment and Structures

## DDFA Need Technical Responses

<b>Need ID Number</b>	ORDD-12
<b>Need Title</b>	Improved Characterization of Buildings and Facilities
<b>Narrative Response to Need</b>	This is a general characterization need to address characterization of buildings and facilities to enable D&D crews to determine which contaminants are present and at what levels including characterization of classified materials at the molecular level.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Shoemaker, Harold (304-285-4715)
<b>Additional Comments</b>	A number of OST-developed and Non-OST developed commercially available technologies are available to address this need. Due to wide variety of facilities and building present at various Oak Ridge sites, there may be some instances where technologies are not available to address some specific condition. If that happens to be the case, DDFA encourages the site to identify such condition(s) so that appropriate technical solution can be developed to address it.

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### OST TECHNOLOGIES

Technology Title	Technology ID
CDI Remote Characterization System	2178
Cogema 3-D Gamma Imaging	2302
Gamma Cam (TM) Radiation Imaging System	1840
In Situ Object Counting System	2098
Indoor Radiation Mapping Using Laser Assisted Ranging and Data System (LARADS)	1946
Mobile Automated Characterization System	1798
Online Measurement of the Progress of Decontamination	2376
Portable X-Ray Fluorescence Spectrometer	1790
Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)	1942

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Aladin Gamma Camera	D&D Tech. Notebook

## DDFA Need Technical Responses

Amandin Surface Counter	D&D Tech. Notebook
Beta Contamination Detector with High Gamma Filtration/Rejection	FIU LSDDP TIS
IonSens 208 Large Item Monitor	D&D Tech. Notebook
NOMAD Plus and MicroNOMAD Portable Spectroscopy Systems	FIU LSDDP TIS
Portable Survey Meters	D&D Tech. Notebook
Radiation Detectors	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-02-DD	Characterization Technologies for Verifying Presence or Absence of Contamination in Structures Scheduled for D&D
CH-DD11-99	Remote Characterization of In-ground Concrete Structures
ID-7.2.06	Remote Characterization for Building Release, Large Area Surface Soil Characterization, and Characterization of Sumps, Debris, Underwater Areas, and Buried Pipes and Utilities
NV10-0001-10	Improved Detection and Characterization of Radioactive Contamination on Large Concrete and Metal Surfaces
OH-M901	Improved Facility Survey Techniques
OH-WV-909	Remote Handled Waste Processing
RF-DD01	Improved Pre-D&D Characterization for Distinguishing Between TRU and Low-Level Contamination
RF-DD02	High Speed Integrated Characterization System for (1) Radioactive, (2) Hazardous and (3) Toxic Contamination
RL-DD036	General Radiation Surveys of Concrete and Equipment in the Materials Processing Facilities for CDI
RL-DD039	Solids (Sediment/Sludge/Dust) Characterization for CDI
RL-DD05	Characterization of Building 324 and 327
RL-DD061	Remote/Robotic Systems for 233-S
SR00-4002	Characterization of Contaminated Surfaces



## DDFA Need Technical Responses

<b>Need ID Number</b>	RF-DD01
<b>Need Title</b>	Improved Pre-D&D Characterization for Distinguishing Between TRU and Low-Level Contamination
<b>Narrative Response to Need</b>	The desire is deploy technologies that characterize pipes, tanks and gloveboxes and other non-uniform surfaces distinguishing between TRU and LLW so that the amount of TRU waste can ultimately be minimized. This segregation would occur prior to packaging, certification and disposal. This need was also identified in FY99.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Powell, Jane (304-285-4687)
<b>Additional Comments</b>	Particular interest is in a technologies ability to provide "real-time" alpha spectroscopy while correcting for high background contamination levels. Additionally, a technology would be capable of measuring beneath painted surfaces.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Decommissioning In-Situ Plutonium Inventory Monitor (DISPIM)	2241
Electret Ion Chambers	2315
Gamma Cam (TM) Radiation Imaging System	1840
Gamma Ray Imaging System	1793
In Situ Object Counting System	2098
Indoor Radiation Mapping Using Laser Assisted Ranging and Data System (LARADS)	1946
Internal Duct Characterization System	42
Pipe Crawler Internal Piping Characterization System	1810
Pipe Explorer (TM) System	74
Portable X-Ray, K-Edge Heavy Metal Detector	134
Small Pipe Characterization System (SPCS)	43

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
Aladin Gamma Camera	D&D Tech. Notebook

## DDFA Need Technical Responses

Amandin Surface Counter	D&D Tech. Notebook
Beta Contamination Detector with High Gamma Filtration/Rejection	FIU LSDDP TIS
Integrated Characterization, Decontamination & Decommissioning Demonstration (ICD3)	FIU LSDDP TIS
IonSens 208 Large Item Monitor	D&D Tech. Notebook
NOMAD Plus and MicroNOMAD Portable Spectroscopy Systems	FIU LSDDP TIS
Pipe Walker	FIU LSDDP TIS
Portable Survey Meters	D&D Tech. Notebook
Radiation Detectors	D&D Tech. Notebook
Versatrax; Remote Pipe Inspection	D&D Tech. Notebook

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### **SIMILAR NEEDS**

<b>Site Need ID</b>	<b>Need Title</b>
AL-00-01-02-DD	Characterization Technologies for Verifying Presence or Absence of Contamination in Structures Scheduled for D&D
AL-09-01-11-MW	Characterization of Equipment Potentially Contaminated with Alpha Emitting Transuranic (TRU) Radionuclides
ID-7.2.06	Remote Characterization for Building Release, Large Area Surface Soil Characterization, and Characterization of Sumps, Debris, Underwater Areas, and Buried Pipes and Utilities
NV09-0001-09	Nonintrusive Surveys in Pipes and Vessels
NV10-0001-10	Improved Detection and Characterization of Radioactive Contamination on Large Concrete and Metal Surfaces
OH-C901	Robotic Device to Improve Characterization of Underground Pipe Lines
OH-M901	Improved Facility Survey Techniques
OH-WV-909	Remote Handled Waste Processing
ORDD-01	Improved Characterization of Equipment, Machinery, Fabricated Metals & Other Materials
ORDD-12	Improved Characterization of Buildings and Facilities

## **DDFA Need Technical Responses**

RL-DD036	General Radiation Surveys of Concrete and Equipment in the Materials Processing Facilities for CDI
RL-DD039	Solids (Sediment/Sludge/Dust) Characterization for CDI
RL-DD05	Characterization of Building 324 and 327
RL-DD061	Remote/Robotic Systems for 233-S
SR00-4002	Characterization of Contaminated Surfaces
SR00-4005	Characterization of Inaccessible Areas

## DDFA Need Technical Responses

<b>Need ID Number</b>	RF-DD02
<b>Need Title</b>	High Speed Integrated Characterization System for (1) Radioactive, (2) Hazardous and (3) Toxic Contamination
<b>Narrative Response to Need</b>	The desire is to improve characterization methods for rad, haz and toxic identification. Then, tie the results into an "all-encompassing" data management system. The end result would be a faster, more accurate process of identifying contaminants, logging survey results and comparing them to regulatory requirements.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Powell, Jane (304-285-4687)
<b>Additional Comments</b>	Specific capabilities include: 1) mapping of data 2) electronic downloading of data 3) data integration and analysis 4) mobile, real-time, alpha/gamma isotopic spectroscopy

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### OST TECHNOLOGIES

Technology Title	Technology ID
Decommissioning In-Situ Plutonium Inventory Monitor (DISPIM)	2241
Gamma Cam (TM) Radiation Imaging System	1840
Gamma Ray Imaging System	1793
In Situ Object Counting System	2098
Indoor Radiation Mapping Using Laser Assisted Ranging and Data System (LARADS)	1946
Mobile Automated Characterization System	1798
Online Measurement of the Progress of Decontamination	2376
Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)	1942
Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)	97

## DDFA Need Technical Responses

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Aladin Gamma Camera	D&D Tech. Notebook
Amandin Surface Counter	D&D Tech. Notebook
Beta Contamination Detector with High Gamma Filtration/Rejection	FIU LSDDP TIS
NOMAD Plus and MicroNOMAD Portable Spectroscopy Systems	FIU LSDDP TIS
Portable Survey Meters	D&D Tech. Notebook
Radiation Detectors	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-02-DD	Characterization Technologies for Verifying Presence or Absence of Contamination in Structures Scheduled for D&D
ID-7.2.15	Field Screening of Paint/Painted Surfaces to Identify Contamination such as; PCB, Lead, and other RCRA Metals in the Paint
NV10-0001-10	Improved Detection and Characterization of Radioactive Contamination on Large Concrete and Metal Surfaces
OH-M901	Improved Facility Survey Techniques
ORDD-12	Improved Characterization of Buildings and Facilities
RL-DD036	General Radiation Surveys of Concrete and Equipment in the Materials Processing Facilities for CDI
RL-DD039	Solids (Sediment/Sludge/Dust) Characterization for CDI
SR00-4002	Characterization of Contaminated Surfaces

## DDFA Need Technical Responses

<b>Need ID Number</b>	RF-DD03
<b>Need Title</b>	Improved Interior Airborne Particulates Control
<b>Narrative Response to Need</b>	The desire is to control Pu contaminated dust generated from various decontamination and size reduction tasks performed inside buildings. Existing baseline methods (control houses) are effective, but inefficient, i.e. time consuming and expensive. New methods will either address reducing the amount of dust generated or controlling it after generation. Reducing generated dust is the preferred option.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Powell, Jane (304-285-4687)
<b>Additional Comments</b>	There exists the potential to generate dust contaminated with hazardous materials such as lead, beryllium, PCB's and asbestos.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
ALARA 1146 Strippable Coating	2314
Concrete Dust Suppression System	2154
Reactor Surface Contamination Stabilization (Reactor Stabilizer)	1839

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
Aerosol Fog System	FIU LSDDP TIS
Electron Wind Generator (EWG)	Vendor Literature
Passive Aerosol Generator (PAG)	FIU LSDDP TIS
Polyurea Spray Elastomers	D&D Tech. Notebook

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### SIMILAR NEEDS

<b>Site Need ID</b>	<b>Need Title</b>
AL-00-01-04-DD	Fixation of Airborne and Removable Contamination
AL-07-01-13-DD	Decontamination of Difficult Access Interior Contamination
OH-M902	Decontamination Techniques for Tritiated Gloveboxes

## **DDFA Need Technical Responses**

OH-M903	Method for Controlling Off-Gassing and Removable Contamination from Tritium Piping
OH-M909	Automated Dust Suppression System
RL-DD032	Contamination Fixative for 233-S
RL-DD04	TRU Waste Fixatives for PFP
RL-DD045	Fixatives for K3 Duct at WESF
RL-DD062	Method to Capture Airborne Alpha Contamination for 233-S
RL-DD07	Fixatives for Building 324 and 327
RL-SNF03	Fixatives for K-Basin
SR00-4012	Stabilization of Contaminated Equipment/Components/Surfaces

## DDFA Need Technical Responses

<b>Need ID Number</b>	RF-DD04
<b>Need Title</b>	Improved Measurement Techniques for Free Release of Property and Salvageable Equipment Contaminated with Radionuclides
<b>Narrative Response to Need</b>	The desire is to rapidly identify and characterize excess, non-essential equipment (desks, chairs, computers and other office equipment) so it can be segregated for "free release" and/or disposal. Current methods (manual "swipe" and counters) are slow and costly.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Powell, Jane (304-285-4687)
<b>Additional Comments</b>	The issue is not only radiological detection but also beryllium detection.

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted.

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Beta Contamination Detector with High Gamma Filtration/Rejection	FIU LSDDP TIS

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-02-DD	Characterization Technologies for Verifying Presence or Absence of Contamination in Structures Scheduled for D&D
AL-00-01-08-DD	Segregation Technology to Separate TRU and Non-TRU and Low Level and Free Release Waste
AL-07-01-14-MW	Characterization and Segregation of TRU Waste Now Stored in Fiberglass Reinforced Plywood Boxes LANL
AL-09-01-11-MW	Characterization of Equipment Potentially Contaminated with Alpha Emitting Transuranic (TRU) Radionuclides
RL-DD033	Field Screening for Hazardous Materials for 105-F and 105-DR Reactors
SR00-4002	Characterization of Contaminated Surfaces



## DDFA Need Technical Responses

<b>Need ID Number</b>	RF-DD07
<b>Need Title</b>	Improved Disposition of Raschig Ring Tanks
<b>Narrative Response to Need</b>	<p>This need has been continued from FY99. While dialog took place between the site and DDFA subcontractor, no resolution or technology solution was identified. Nothing is currently available for FY00.</p> <p>The desire is to disposition the Raschig-Ring Tanks in a manner to reduce or eliminate the use of rad enclosures and respiratory protection. Disposal of the tanks, without removing the rings&lt; would be particularly desirable.</p>
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Powell, Jane (304-285-4687)
<b>Additional Comments</b>	<p>Reducing the labor involved is of interest considering the potential for airborne release/exposure during the manual opening and removal of the rings.</p> <p>The Trojan contaminated reactor vessel was disposed of as LLW based on an analysis and process of backfilling the vessel with concrete. A similar process depending on the activity level, and makeup of contaminants may be an option for the Raschig Ring Tanks.</p>

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted.

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
Aerosol Fog System	FIU LSDDP TIS
Cesium solution flush	Rocky Flats
Special Study	Dan Young

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### SIMILAR NEEDS

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None identified.

## DDFA Need Technical Responses

<b>Need ID Number</b>	RF-DD08
<b>Need Title</b>	Improved Worker Protection Clothing and Systems
<b>Narrative Response to Need</b>	Problems of restricted mobility, potential heat exhaustion and added weight significantly impact worker productivity. The driver on PPE is to find cost-effective equipment that can either be discarded without major cost or be reusable.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Powell, Jane (304-285-4687)
<b>Additional Comments</b>	FY99 also identified puncture/tear resistance as a beneficial trait.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
FRHAM-TEX Anti Contamination Suit	1854
NuFab Anti Contamination Suit	1855
Personal Ice Cooling System (PICS)	1898
Sealed-Seam Sack Suit	1954
Wireless Remote Monitoring System	2104

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
Air Tight Modular Workstation	FIU LSDDP TIS
Area Monitor Probe (high-range GM probe)	D&D Tech. Notebook
Digital Alarming Dosimeters	D&D Tech. Notebook
Dosimeters/Dose Mapping	D&D Tech. Notebook
Impact Visor	FIU LSDDP TIS
Kool Jacket	D&D Tech. Notebook
Kool Jacket Lite	D&D Tech. Notebook
Kool Vest	D&D Tech. Notebook
Wireless Remote Monitor-Plus	D&D Tech. Notebook

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
CH-DD04-99	Improved Worker Protection Equipment
OH-F042	Telemetric Monitoring of Heat Stress
SR00-4016	Health and Safety Technologies

## DDFA Need Technical Responses

<b>Need ID Number</b>	RF-DD09
<b>Need Title</b>	Improved Decontamination of Porous Surfaces in Preparation for Building Demolition
<b>Narrative Response to Need</b>	The desire is to identify more efficient means of removing contamination from porous surfaces. Most of the porous surfaces are concrete or cinder block floors, ceilings and walls, and they are often painted with materials containing lead and/or PCB's. This may lead to the generation of "mixed waste" issues.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Powell, Jane (304-285-4687)
<b>Additional Comments</b>	None

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
2-D Linear Motion System (Wall Walker)	1476
Biodegradation of Concrete	1421
Centrifugal Shot Blast System	1851
Concrete Shaver	1950
High Productivity Vacuum Blasting	2224
INEEL ASTD: Release of Concrete for Recycle from D&D Projects	2373
Remotely Operated Scabbling	2099
Rotary Peening with Captive Shot	1812

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
Betonamist	FIU LSDDP TIS
En-Vac Robotic Climber	FIU LSDDP TIS
Horizontal Surface Shot Blaster (EBE 350)	D&D Tech. Notebook
KSI Tentacle Manipulator	FIU LSDDP TIS
Milling	FIU LSDDP TIS
Robotic Climber	FIU LSDDP TIS

## DDFA Need Technical Responses

Sivablast System

D&D Tech. Notebook -  
ANS Robotics/Remote  
Systems

Vertical Surface Shot Blaster (EBE 250 VHC)

D&D Tech. Notebook

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### SIMILAR NEEDS

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Site Need ID	Need Title
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AL-00-01-06-DD	Effective Decontamination of Concrete
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AL-07-01-12-DD	Decontaminate and Decommission Radioactively Contaminated Facilities
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CH-DD08-99	Remote Decontamination of In-ground Concrete Structures
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ID-7.2.03	Decontamination of Concrete Walls, Floors, Ceilings, and Corners
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ORDD-03	Improved Decontamination of Facility Concrete and Painted Surfaces
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ORDD-06	Improved Remote Decontamination Methods
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RL-DD06	Decontamination of Building 324 and 327
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RL-DD061	Remote/Robotic Systems for 233-S
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SR00-4004	Decontamination of Contaminated Concrete
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## DDFA Need Technical Responses

<b>Need ID Number</b>	RF-DD10
<b>Need Title</b>	Improve Decontamination of Non-Porous Building Property and Structures
<b>Narrative Response to Need</b>	The desire is to identify more efficient decontamination methods for non-porous surfaces such as gloveboxes, metal beams, decking, piping, tanks, ductwork etc. Similar to porous surface decon, the possibility exists for the contaminants containing PCB's and lead thus complicating disposal (mixed wastes).
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Powell, Jane (304-285-4687)
<b>Additional Comments</b>	None

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Advanced Recyclable Media System	1971
CORPEX Nuclear Decontamination Process	87
Decontamination and Volume Reduction System (DVRS)	2242
Ex-Situ Large Bore Pipe Decontamination and Characterization System	2375
In-Situ Pipe Decontamination System	2379
Laser Surface Cleaning	32
Portable Concentrator for Processing Plutonium Contaminated Solutions	1454
Removal of Contaminants from Equipment and Debris, and Waste Minimization Using TECHXTRACT	1450
Soda Blasting Decontamination Process	369
Soft Media Blast Cleaning	1899
Steam Vacuum Cleaning	1780

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
CO2 Pellet Cleaning	D&D Tech. Notebook
CORD-UV	D&D Tech. Notebook
Decoha Pipe Decontamination	FIU LSDDP TIS

## DDFA Need Technical Responses

Decontamination for Decommissioning (DFD) Process	D&D Tech. Notebook
Laser	FIU LSDDP TIS
Laser ZAWCAD	FIU LSDDP TIS
Mobile Decon Systems (super-heated water, abrasive blasting, or mechanical rotary systems)	D&D Tech. Notebook
Mobile Decontamination Facility	D&D Tech. Notebook
Model 4 Tube Cleaner	FIU LSDDP TIS
Pipe Decontamination System - FIU-HCET	FIU LSDDP TIS
Polyurea Spray Elastomers	D&D Tech. Notebook
RADCON LASER (ERASER)	FIU LSDDP TIS
Sivablast System	D&D Tech. Notebook - ANS Robotics/Remote Systems

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-07-01-12-DD	Decontaminate and Decommission Radioactively Contaminated Facilities
AL-07-01-13-DD	Decontamination of Difficult Access Interior Contamination
AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals
ID-7.2.24	Decontamination of Metal Debris
ID-7.2.25	Decontamination of Metal Pipes
OH-WV-902	Decontamination of HLW Canisters
ORDD-02	Improved Decontamination of Equipment, Machinery, Fabricated Metals & Other Materials
RL-DD021	Metal Decontamination and Recycling for the D&D Program
RL-DD03	Terminal Clean-Out and TRU Waste Decontamination of PFP
RL-DD046	Clean-Out of Isolated Piping Systems in Building 324
RL-DD06	Decontamination of Building 324 and 327

## **DDFA Need Technical Responses**

RL-DD063	Decontamination of Transuranic Debris for 233-S
SR00-2029	Alternate DWPF Canister Decon Technology
SR00-4003	Material Recycle (Process Equipment, Metal, Steel, and Concrete)
SR00-4015	Decontamination of Small Components



## DDFA Need Technical Responses

<b>Need ID Number</b>	RF-DD11
<b>Need Title</b>	Improved Size Reduction of Contaminated Equipment and Demolition Waste
<b>Narrative Response to Need</b>	The desire is to find improved techniques to segment, volume and size reduce a variety of equipment that is contaminated either as TRU or LLW. Equipment varies from gloveboxes, pipes, concrete, furniture etc. Needs for equipment vary whether addressing "in-situ or ex-situ" equipment. The focus remains on worker safety, cost and schedule.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Powell, Jane (304-285-4687)
<b>Additional Comments</b>	None

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### OST TECHNOLOGIES

Technology Title	Technology ID
Decontamination and Volume Reduction System (DVRS)	2242
Diamond Wire Cutting Technology Assessment of Tokamak Fusion Rest Reactor Vacuum Vessel Surrogate	2389
Hand Held Shear	2304
High Speed Clamshell Pipe Cutter	1807
Laser Cutting and Size Reduction	1477
Mega-Tech Hydraulic Shears	2953
Mobile Work Platform	2243
Oxy-Gasoline Torch	1847
Pipe Cutting and Crimping System	2955
Self Contained Pipe Cutting Shear	1948
Size Reduction Machine	2395

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Arc Saw	FIU LSDDP TIS
Hydraulic Cutters/Shears	D&D Tech. Notebook

## DDFA Need Technical Responses

Hydraulic Shears	FIU LSDDP TIS
Integrated Characterization, Decontamination & Decommissioning Demonstration (ICD3)	FIU LSDDP TIS
LUKAS Rescue Tools - Hydraulic Cutting Shears	D&D Tech. Notebook
Pipe Crimper	FIU LSDDP TIS
Wachs Wheel Cutter	FIU LSDDP TIS

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### **SIMILAR NEEDS**

<b>Site Need ID</b>	<b>Need Title</b>
AL-00-01-01-DD	Size Reduction Technology for TRU Mixed Waste
AL-00-01-05-DD	Alternative Cutting Techniques for Piping
AL-00-01-07-DD	Ex Situ Glove Box Size Reduction System
AL-00-01-12-DD	Remote-Handled Size Reduction Technology
AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals
CH-DD01-00	Reduced Emissions Metal Cutting
CH-DD06-99	Size Reduction of Massive Metal Structures
ID-7.2.12	Cutting Equipment for Large Items in Above Ground or Underground Structures & Underwater
NV07-0001-03	Oversize TRU Waste Size Reduction
OH-F010	Safe and Efficient Process Piping and Conduit Dismantlement
OH-F027	Improved Equipment Dismantlement
OH-WV-910	Size Reduction of Components
RL-DD02	Glove Box Size Reduction System for PFP
RL-DD030	Cutting Plutonium Contaminated Pipe for 233-S
RL-DD08	Remote Cutting Technologies for Building 324 and 327
SR00-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment
SR00-4001	Dismantlement of Large and/or Complex Equipment and Structures

## **DDFA Need Technical Responses**

SR00-4008      Dismantlement of Concrete-Encased Piping

## DDFA Need Technical Responses

<b>Need ID Number</b>	RF-DD15
<b>Need Title</b>	Real-Time Beryllium Surface Characterization
<b>Narrative Response to Need</b>	<p>Concern exists surrounding the extent and impact of airborne beryllium contamination in buildings and equipment. Neither the extent of beryllium contamination on site (although it is believed to be considerable) nor how concentrations of exposure relate to contracting Chronic Beryllium Disease (CBD) are well known.</p> <p>The desire is to find a means of "real-time" Be characterization for salvageable property.</p>
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Powell, Jane (304-285-4687)
<b>Additional Comments</b>	The site's primary concern is for the prevention of CBD

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Beryllium Swipe Monitor	2915
Online Measurement of the Progress of Decontamination	2376

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
Radiation Detectors	D&D Tech. Notebook

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### SIMILAR NEEDS

<b>Site Need ID</b>	<b>Need Title</b>
AL-00-01-02-DD	Characterization Technologies for Verifying Presence or Absence of Contamination in Structures Scheduled for D&D
RL-DD033	Field Screening for Hazardous Materials for 105-F and 105-DR Reactors
SR00-4002	Characterization of Contaminated Surfaces

## DDFA Need Technical Responses

<b>Need ID Number</b>	RF-DD16
<b>Need Title</b>	Real-Time Beryllium Air Monitoring
<b>Narrative Response to Need</b>	<p>Concern exists surrounding the extent and impact of airborne beryllium contamination in buildings and equipment. Neither the extent of beryllium contamination on site (although it is believed to be considerable) nor how concentrations of exposure relate to contracting Chronic Beryllium Disease (CBD) are well known.</p> <p>The desire is to find a means of "real-time" air monitoring for Be.</p>
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Powell, Jane (304-285-4687)
<b>Additional Comments</b>	Equipment should be almost instantaneous, continuous and provide workers an "alarm" function. Multiple instruments could be purchased to outfit all buildings where Be is a concern.

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### OST TECHNOLOGIES

Technology Title	Technology ID
Beryllium Air Monitor	2914
Remote Surveillance of Facilities Awaiting D&D	2377

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Alpha Beta Particulate (continuous) Monitor	D&D Tech. Notebook
Area Monitor Probe (high-range GM probe)	D&D Tech. Notebook
Ionization Chambers	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-09-01-02-DD-S	Radiological Air Monitoring Needs for Current D&D/ER Operations
CH-DD04-99	Improved Worker Protection Equipment

## DDFA Need Technical Responses

<b>Need ID Number</b>	RF-DD17
<b>Need Title</b>	Improved Dust Control Methods During Building Demolition for Structures that are not Free Releasable
<b>Narrative Response to Need</b>	The desire is to identify methods to control dust generation and potential releases of contamination during demolition. RFFO's plan include the demolition of buildings that are not "free-released".
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Powell, Jane (304-285-4687)
<b>Additional Comments</b>	Suggest surveying the industrial base to identify any facilities that have recently been demolished. BWX Technologies Parks Site is a recent example of building demolition where dust control methods have been employed to control dust with some level of Pu and U contamination .

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### OST TECHNOLOGIES

Technology Title	Technology ID
ALARA 1146 Strippable Coating	2314
Concrete Dust Suppression System	2154
Reactor Surface Contamination Stabilization (Reactor Stabilizer)	1839

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Aerosol Fog System	FIU LSDDP TIS
Electron Wind Generator (EWG)	Vendor Literature
Passive Aerosol Generator (PAG)	FIU LSDDP TIS
Polyurea Spray Elastomers	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-04-DD	Fixation of Airborne and Removable Contamination
OH-M909	Automated Dust Suppression System
RL-DD032	Contamination Fixative for 233-S

## **DDFA Need Technical Responses**

RL-DD04	TRU Waste Fixatives for PFP
RL-DD062	Method to Capture Airborne Alpha Contamination for 233-S
RL-DD07	Fixatives for Building 324 and 327
RL-SNF03	Fixatives for K-Basin
SR00-4012	Stabilization of Contaminated Equipment/Components/Surfaces

## DDFA Need Technical Responses

**Need ID Number** RF-DD18

**Need Title** Real-Time Radiation Air Monitoring During Building Demolition

**Narrative Response to Need** RFFO's plan include the demolition of buildings that are not "free-released". Control of dust generation and potential releases of contamination during demolition is necessary. The only way to ensure compliance with release criteria is to continuously monitor the air during demolition. The desire is to identify "real-time" air monitoring equipment.

**Focus Area** DDFA

**Federal Focus Area POC** Powell, Jane (304-285-4687)

**Additional Comments** None

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### OST TECHNOLOGIES

Technology Title	Technology ID
Remote Surveillance of Facilities Awaiting D&D	2377

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Alpha Beta Particulate (continuous) Monitor	D&D Tech. Notebook
Area Monitor Probe (high-range GM probe)	D&D Tech. Notebook
Electron Wind Generator (EWG)	Vendor Literature
Ionization Chambers	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-09-01-02-DD-S	Radiological Air Monitoring Needs for Current D&D/ER Operations
CH-DD04-99	Improved Worker Protection Equipment



## DDFA Need Technical Responses

<b>Need ID Number</b>	RF-DD20
<b>Need Title</b>	Characterization and Removal of Large Contaminated Equipment Entombed in Concrete
<b>Narrative Response to Need</b>	The desire is to identify, locate and remove ?some? large equipment that has been entombed in concrete in Bldg. 776. Identifying potentially successful characterization equipment and equipment to remove the concrete and equipment is "critical to the success" of this building demolition.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Powell, Jane (304-285-4687)
<b>Additional Comments</b>	No characterization technologies have currently been identified to accomplish this task. Consideration might be given to utilizing X-ray to locate the equipment, then drilling "pilot" holes to send probes down to characterize.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Diamond Wire Cutting Technology Assessment of Tokamak Fusion Rest Reactor Vacuum Vessel Surrogate	2389
Dual Arm Work Platform Teleoperated Robotics System	1787
Liquid-Nitrogen Cooled Diamond-Wire Concrete Cutting	2107
Mobile Robot Worksystem (ROSIE)	1799
Remote Control Concrete Demolition System	2100
Remote/Robotic Size Reduction System	2916
Track Mounted Shear/Crusher	2303

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
Diamond Wire Saw	D&D Tech. Notebook
Feed-Water Nozzle Tool	D&D Tech. Notebook - ANS Robotics/Remote Systems
Safety-Injection Nozzle Tool	D&D Tech. Notebook - ANS Robotics/Remote Systems

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
ID-7.2.12	Cutting Equipment for Large Items in Above Ground or Underground Structures & Underwater
ID-7.2.13	Penetrations in Concrete Floor and Demolition of Concrete Roof
ID-7.2.28	Remote Demolition of Concrete Structures
OH-F047	Pulverizing Concrete for Site Aggregate Needs
ORDD-07	Remote Dismantlement Methods
SR00-4001	Dismantlement of Large and/or Complex Equipment and Structures
SR00-4008	Dismantlement of Concrete-Encased Piping

## DDFA Need Technical Responses

<b>Need ID Number</b>	RF-DD21
<b>Need Title</b>	Improved Mechanical or Robotic Removal of Lead Shielding from Gloveboxes
<b>Narrative Response to Need</b>	The desire is to be able to remove Pb from the surfaces of gloveboxes. Removal is required to meet WIPP waste acceptance criteria.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Powell, Jane (304-285-4687)
<b>Additional Comments</b>	Mechanical processes are too slow, thermal processes too hazardous. Rocky has requested a look into the system being developed in United Kingdom. DDFA will pursue information relative to existence and function.

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### OST TECHNOLOGIES

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Technology Title	Technology ID
Modular Manipulator for Robotics Applications	2199

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted.

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### SIMILAR NEEDS

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None identified.

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD01
<b>Need Title</b>	Cesium/Strontium Capsule Leak Detection System for WESF
<b>Narrative Response to Need</b>	Hanford seeks a means to effectively determine if the cesium/strontium capsules stored in the Waste Encapsulation Storage Facility (WESF) are leaking. The ability to determine that a capsule is leaking into the pool cell will require a sensor system capable of detecting cesium chloride and/or strontium fluoride. The system must be operable in high-radiation environments and capable of detecting and isolating a single leaking capsule. The system may require remote, underwater deployment capabilities. This need is tied to RL-DD041 and Science needs RL-DD023-S and RL-DD027-S.
<b>Focus Area</b>	NMFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	<p>CMST has supported initial investigations at the Special Technologies Laboratory for the development of sequestering agents in conjunction with the Laser Induced Fluorescence Imaging (LIFI) System. LIFI has demonstrated its ability to characterize uranium oxides due to their phosphorescent nature. Using sequestering agents, SNL has shown that they are able to detect a luminescent signature for Cesium 137.</p> <p>Two EM Science Program projects may contribute to the eventual solution to this Technology need. These are #55247 "Sensors Using Molecular Recognition in Luminescent, Conductive Polymers" and #64982 "Metal Ion Analysis Using Near-Infrared Dyes and the "Laboratory-on-a-Chip".</p>

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted.

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### NON-OST TECHNOLOGIES

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<b>Technology Title</b>	<b>Data Source</b>
Underwater Remotely Operated Detectors	FIU LSDDP TIS

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
ID-7.2.20	Quantitative Underwater Radionuclide Characterization of Structures, Equipment, and Contaminated Pool Walls

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD010
<b>Need Title</b>	Radiation Hardened Robotics for Building 324
<b>Narrative Response to Need</b>	This is a general Robotics need for radiation hardened remote systems to deploy multiple tools and end effectors for a variety of D&D activities (characterization, decontamination and cutting technologies) within Building 324.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	In addition to the "Robotic Platform for B-Cell Cleanout," which should provide partial or complete solution to this need, there are a number of OST developed and non-OST commercially available technologies that may help to satisfy this need. In addition, the DDFA has supported a study by Argonne National Laboratory entitled " A Survey of Commercially Available Manipulators, End-Effectors, and Delivery Systems for Reactor Decommissioning Activities," ANL/D&D/TM-95/1, which may provide additional information on Radiation Hardened Robotic Systems for use at Richland. DDFA supports the development of robotic and remote systems for D&D through the Robotics Technology Development Program (RBX).

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Dual-Point Impedance Control for Telerobotics	2173
Houdini-II Remotely Operated Vehicle System	2085
Intelligent Inspection and Survey Robot	272
Robotic Platform for B-Cell Cleanout	2919

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
ARTISAN (heavy duty hydraulic manipulators)	D&D Tech. Notebook
Minescout	D&D Tech. Notebook
MiniTrac & MicroTrac; Remote Operated Crawlers	D&D Tech. Notebook
Mobile Platform, Heavy-Duty, Multiple Manipulator Robot	FIU LSDDP TIS
MURV-100 Teleoperated Robot System	D&D Tech. Notebook

## DDFA Need Technical Responses

NEATER (Nuclear Engineered Advanced Robots) Pioneer Robot	D&D Tech. Notebook D&D Tech. Notebook - ANS Robotics/Remote Systems
Portable Articulated Arm Deployment System (PAADS)	D&D Tech. Notebook - ANS Robotics/Remote Systems
Tele-Operated Crawler System	D&D Tech. Notebook - ANS Robotics/Remote Systems

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-12-DD	Remote-Handled Size Reduction Technology
CH-DD08-99	Remote Decontamination of In-ground Concrete Structures
CH-DD11-99	Remote Characterization of In-ground Concrete Structures
ID-7.2.08	Robotics for D&D
ID-7.2.19	Remote/Robotic Technologies for Access and Deployment of Characterization & Sampling Tools
ID-7.2.28	Remote Demolition of Concrete Structures
ID-7.2.29	Remote Demolition of Machinery
ID-7.2.30	Remote Demolition of Metal Structures
ID-7.2.31	Remote Demolition of Piping
OH-WV-903	Vitrification Expended Material Processing
OH-WV-909	Remote Handled Waste Processing
ORDD-07	Remote Dismantlement Methods
SR00-2031	Develop Remote Technology to Improve DWPF Operations

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD011
<b>Need Title</b>	Structural Integrity Inspection - 324/327 Buildings Hot Cell Liners
<b>Narrative Response to Need</b>	Hanford seeks a remote inspection system to replace the current visual and manual camera-based system for inspecting the Building 324/327 hot cell liners.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	Commercial Radiography (x-ray) coupled with TMS # 278 Robotic End Effector for Inspection and Sampling of Storage Tanks may be feasible for this need. The "Robotic Platform for B-Cell Cleanout" should provide partial solution to this need.

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### OST TECHNOLOGIES

Technology Title	Technology ID
Robotic End Effector for Inspection and Sampling of Storage Tanks	278
Robotic Platform for B-Cell Cleanout	2919

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Circumspector	D&D Tech. Notebook
Photogrammetry	FIU LSDDP TIS
Scissors; Camera Deployment Mechanism	D&D Tech. Notebook
Tele-Operated Crawler System	D&D Tech. Notebook - ANS Robotics/Remote Systems
TV3 Stereoscopic TV	D&D Tech. Notebook

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### SIMILAR NEEDS

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None identified.



## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD02
<b>Need Title</b>	Glove Box Size Reduction System for PFP
<b>Narrative Response to Need</b>	Hanford seeks an ex-situ system to size reduce gloveboxes following initial in-situ decontamination of plutonium. Ideally, the system will also conduct final decontamination, non-destructive assay, and packaging. In addition, it is desirable that the system can also be used for pipes, ducts, and other metal objects.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	In general, the DDFA is addressing this need within Work Package DD-12, through LSDDP technology demonstrations and ASTD technology deployments at LANL/NTS and Rocky Flats, respectively. Systems developed and tested at these sites should be available by FY2002 and should have direct applicability to Hanford's Plutonium Finishing Plant (PFP), which requires the technology/system beginning in FY2002 through FY2014. The DVRS (TMS # 2242) is being used as the baseline technology for decontamination and size reduction at LANL. NTS will be deploying a laser size reduction system in FY00 at LANL. Each project is also evaluating additional innovative technologies, including improved cutting and shearing tools for glovebox size reduction. Additionally, the Florida International University Hemispheric Center for Environmental Technologies (FIU-HCET) has recently received a "clean" glovebox from Rocky Flats to conduct evaluation of a series of improved size reduction tools.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Decommissioning In-Situ Plutonium Inventory Monitor (DISPIM)	2241
Decontamination and Volume Reduction System (DVRS)	2242
Diamond Wire Cutting Technology Assessment of Tokamak Fusion Rest Reactor Vacuum Vessel Surrogate	2389
Hand Held Shear	2304
High Speed Clamshell Pipe Cutter	1807
Laser Cutting and Size Reduction	1477

## DDFA Need Technical Responses

Mega-Tech Hydraulic Shears	2953
Modular Manipulator for Robotics Applications	2199
Oxy-Gasoline Torch	1847
Pipe Cutting and Crimping System	2955
Remote/Robotic Size Reduction System	2916
Rocky Flats D&D Initiative - Central Size Reduction Facility	2918
Self Contained Pipe Cutting Shear	1948
Size Reduction Machine	2395

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Arc Saw	FIU LSDDP TIS
Champion Shears	LSDDP (SRS)
Dry Size Reduction System (DSRS)	FIU LSDDP TIS
Hydraulic Cutters/Shears	D&D Tech. Notebook
Hydraulic Shears	FIU LSDDP TIS
Integrated Characterization, Decontamination & Decommissioning Demonstration (ICD3)	FIU LSDDP TIS
LUKAS Rescue Tools - Hydraulic Cutting Shears	D&D Tech. Notebook
Pipe Crimper	FIU LSDDP TIS
Wachs Wheel Cutter	FIU LSDDP TIS

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-01-DD	Size Reduction Technology for TRU Mixed Waste
AL-00-01-07-DD	Ex Situ Glove Box Size Reduction System
AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals
CH-DD01-00	Reduced Emissions Metal Cutting
NV07-0001-03	Oversize TRU Waste Size Reduction
OH-WV-910	Size Reduction of Components

## **DDFA Need Technical Responses**

ORDD-09	Improved Non-Thermal Cutting of Process Equipment
RF-DD11	Improved Size Reduction of Contaminated Equipment and Demolition Waste
SR00-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD021
<b>Need Title</b>	Metal Decontamination and Recycling for the D&D Program
<b>Narrative Response to Need</b>	Hanford desires cost-effective methods to decontaminate metal (steel and carbon steel) for recycle or reuse. The preferred method must decontaminate pipes and equipment internals to free-release levels, minimize secondary waste. The system should be integrated with surveying systems to verify that free release criteria have been met.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	The National Center of Excellence for Metals Recycle ( <a href="http://www.oro.doe.gov/em/metals/">http://www.oro.doe.gov/em/metals/</a> ) may be able to provide additional information and resources to identify solutions to Richland's need. One EM Science Program project that has potential to lead to improved metal decontamination and recycling processes is #60363 "Optimization of Thermochemical, Kinetic, and Electrochemical Factors Governing Partitioning of Radionuclides during Melt Decontamination of Radioactively Contaminated Stainless Steel"

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### OST TECHNOLOGIES

Technology Title	Technology ID
Laser Decontamination and Recycle of Metals	955
Laser Surface Cleaning	32
Stainless Steel Beneficial Reuse	80

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Sivablast System	D&D Tech. Notebook - ANS Robotics/Remote Systems

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### SIMILAR NEEDS

Site Need ID	Need Title
ID-7.2.24	Decontamination of Metal Debris
ID-7.2.25	Decontamination of Metal Pipes

## **DDFA Need Technical Responses**

ID-7.2.27	Reuse of Metal Pipes, Lumber, Lead, and Other Metals
ORDD-02	Improved Decontamination of Equipment, Machinery, Fabricated Metals & Other Materials
RF-DD10	Improve Decontamination of Non-Porous Building Property and Structures
SR00-4003	Material Recycle (Process Equipment, Metal, Steel, and Concrete)
SR00-4015	Decontamination of Small Components

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD022-S
<b>Need Title</b>	Photon-Assisted Decontamination Chemistry
<b>Narrative Response to Need</b>	Hanford is interested in advancing the state-of-the-art for laser systems used to decontaminate metal and concrete surfaces. Improved understanding and modeling of the photochemical and photomechanical mechanisms of laser ablation are needed. This Science need is tied to Technology needs RL-DD03, RL-DD06, and RL-DD029.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	This need may be partially addressed through EM Science Program project# 60283 "Waste Volume Reduction Using Surface Characterization and Decontamination by Laser Ablation." This project involves basic research in surface chemistry and physics, studying the behavior of radioactive contaminants on surfaces aimed at reducing the costs of decontaminating very large buildings on DOE sites.

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted.

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted.

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### SIMILAR NEEDS

<b>Site Need ID</b>	<b>Need Title</b>
ID-S.2.05	Understanding the Physics and Chemistry of Concrete Decontamination
ID-S.2.06	Understanding the Physics and Chemistry of Metal Decontamination

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD023-S
<b>Need Title</b>	Cesium Source Identification
<b>Narrative Response to Need</b>	Hanford is seeking basic understanding of processes for leak detection. This Science need is tied directly to Technology need RL-DD01.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	Two EM Science Program projects may contribute to the eventual solution to this Technology need. These are #55247 "Sensors Using Molecular Recognition in Luminescent, Conductive Polymers" and #64982 "Metal Ion Analysis Using Near-Infrared Dyes and the "Laboratory-on-a-Chip".

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted.

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted.

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### SIMILAR NEEDS

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None identified.

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD025-S
<b>Need Title</b>	Effluent Capture
<b>Narrative Response to Need</b>	Hanford is seeking improved basic understanding of particle size and particle size distribution associated with smoke generated from alternative cutting methods. Improved knowledge in this area will support the development of improved filtration and effluent capture systems. This Science need is tied to Technology needs RL-DD02 and RL-DD08.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	This need may be partially addressed through EM Science Program project# 60163 "Investigation of Techniques to Improve Continuous Air Monitors Under Conditions of High Dust Loading in Environmental Setting".

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted

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### SIMILAR NEEDS

<b>Site Need ID</b>	<b>Need Title</b>
AL-09-01-02-DD-S	Radiological Air Monitoring Needs for Current D&D/ER Operations



## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD026-S
<b>Need Title</b>	Contaminant Binding Science Need
<b>Narrative Response to Need</b>	Hanford seeks improved understanding of contamination chemistry and their binding mechanisms to various contaminated surfaces to allow for the development of improved fixatives and decontaminants (strippable coatings). This Science need is tied to the following Technology needs: RL-DD02, RL-DD03, RL-DD04, RL-DD06, RL-DD07, RL-DD09, RL-DD029, and RL-DD030. Though not listed in the need statement, this need is also tied to RL-DD032, and RL-DD045.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	<p>A number of EM Science Program projects may provide additional understanding leading to a technical solution associated with this need. These projects include:</p> <p>#55380 "In-Situ Spectro-Electrochemical Studies of Radionuclide Contaminated Surface Films on Metals and the Mechanism of their Formation and Dissolution"</p> <p>#54724 "Synthesis of New Water-Soluble Metal-Binding Polymers: Combinatorial Chemistry Approach"</p> <p>#59925 "Modeling of Diffusion of Plutonium in Other Metals and of Gaseous Species in Plutonium-Based Systems"</p> <p>#64865 "Micelle Formation and Surface Interactions in Supercritical CO<sub>2</sub> Fundamental Studies for the Extraction of Actinides from Contaminated Surfaces "</p> <p>#64912 "Improved Decontamination: Interfacial, Transport, and Chemical Properties of Aqueous Surfactant Cleaners"</p>

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
ID-S.2.05	Understanding the Physics and Chemistry of Concrete Decontamination
ID-S.2.06	Understanding the Physics and Chemistry of Metal Decontamination

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD027-S
<b>Need Title</b>	Cesium Integrity Assessment
<b>Narrative Response to Need</b>	Hanford seeks improved understanding of the physical and chemical effects contributing to failure of the cesium/strontium capsules. Improved understanding in this area will lead to better methods of detecting capsule failure and leaks. This Science need is tied to Technology need RL-DD026.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	DDFA through its Lead laboratory affiliate will coordinate with the EM Science Program for upcoming solicitations to incorporate this need for science investigation.

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted

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### SIMILAR NEEDS

<b>Site Need ID</b>	<b>Need Title</b>
ID-S.2.06	Understanding the Physics and Chemistry of Metal Decontamination

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD029
<b>Need Title</b>	Critically Safe Vacuum System for 233-S
<b>Narrative Response to Need</b>	Hanford desires an improved vacuum system for collecting dust/material in a critically safe configuration to be used for plutonium contaminated materials/equipment in the 233-S Facility.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	Improved vacuum systems have been considered as a means of more safely removing raschig rings from RFETS tanks. DDFA will investigate commercially available technologies to meet this Hanford need.

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted

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### SIMILAR NEEDS

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None identified.

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD029-S
<b>Need Title</b>	Algae Corrosion and Growth Inhibition
<b>Narrative Response to Need</b>	Hanford seeks improved understanding on the mechanisms which govern algae growth, and the interaction (corrosion effects) of algae and its byproducts on stainless steel. This research will support improved methods to control algae growth in the WESF pool. No Technical need is tied to this Science need.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	The EM Science Program as incorporated this need into its upcoming solicitations for science investigation.

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted

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### SIMILAR NEEDS

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None identified.

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD03
<b>Need Title</b>	Terminal Clean-Out and TRU Waste Decontamination of PFP
<b>Narrative Response to Need</b>	Hanford seeks solutions to remove and stabilize plutonium (primarily plutonium oxides) held-up in process pipes, ducts, gloveboxes, and other metal and concrete surfaces. Ideally, the system will perform in-situ decontamination of the process equipment and surfaces within the Plutonium Reclamation Facility (PRF) and Plutonium Finishing Plant (PFP). The primary focus of this need is the removal of contaminants from equipment surfaces rather than treatment of contaminants.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	In general, the DDFA is addressing this need within Work Package DD-12, through LSDDP technology demonstrations and ASTD technology deployments at LANL and Rocky Flats, respectively. The DVRS (TMS # 2242) is being used as the baseline technology for decontamination and size reduction at LANL. Each project is also evaluating innovative technologies alternatives for improved decontamination of gloveboxes. LANL is currently investigating the use of foaming agents for decontamination. For pipe systems, FIU-HCET is currently developing two technologies, which may benefit Richland; Ex-Situ Large-Bore Pipe Decontamination and Characterization System and In-Situ Pipe Decontamination System. FIU-HCET is also developing an Integrated Vertical and Overhead Decontamination System that may provide a partial solution for the decontamination of metal and concrete surfaces. Rocky Flats has tested Sugar Fogging for stabilization of plutonium oxides, which may be applicable to Hanford's need. For decontamination, DDFA has demonstrated numerous strippable coatings that may apply.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Decontamination and Volume Reduction System (DVRS)	2242
In-Situ Pipe Decontamination System	2379
Liquid Membrane System for Removal and Concentration of Transuranic Elements	277
NURES Nuclide Removal System	2937

## DDFA Need Technical Responses

Portable Concentrator for Processing Plutonium Contaminated Solutions	1454
Specialized Separation Utilizing 3M Membrane Technology	1543
TRUEX/SREX	347

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
CORD-UV	D&D Tech. Notebook
Decoha Pipe Decontamination	FIU LSDDP TIS
Decontamination for Decommissioning (DFD) Process	D&D Tech. Notebook
Model 4 Tube Cleaner	FIU LSDDP TIS
Pipe Decontamination System - FIU-HCET	FIU LSDDP TIS
Rototherm Portable Concentrator	FIU LSDDP TIS

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-07-01-13-DD	Decontamination of Difficult Access Interior Contamination
RF-DD10	Improve Decontamination of Non-Porous Building Property and Structures
SR00-4003	Material Recycle (Process Equipment, Metal, Steel, and Concrete)

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD030
<b>Need Title</b>	Cutting Plutonium Contaminated Pipe for 233-S
<b>Narrative Response to Need</b>	Improved size reduction techniques are needed to cut various sizes of pipes with internal dispersible and fixed plutonium contamination. The pipes range in size from 0.5 in. to 7.0 in. outside diameter of schedule 10 or schedule 40 stainless steel; may be vertical or horizontal, free standing or against walls or floors; and, are in congested areas at elevated locations that inhibit the use of glove bags for contamination control.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	Hanford claimed (no year given) a deployment "commitment" of the High Speed Clamshell Cutter (TMS# 1807) in IPABS in FY99. The associated PBS reported was RL-ER06 which is linked to this need.

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### OST TECHNOLOGIES

Technology Title	Technology ID
Mega-Tech Hydraulic Shears	2953
Pipe Cutting and Crimping System	2955
Size Reduction Machine	2395

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Pipe Crimper	FIU LSDDP TIS

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-05-DD	Alternative Cutting Techniques for Piping
CH-DD01-00	Reduced Emissions Metal Cutting
ID-7.2.12	Cutting Equipment for Large Items in Above Ground or Underground Structures & Underwater
ID-7.2.31	Remote Demolition of Piping
OH-F010	Safe and Efficient Process Piping and Conduit Dismantlement
RF-DD11	Improved Size Reduction of Contaminated Equipment and Demolition Waste



## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD030-S
<b>Need Title</b>	Polystyrene Cube Analysis for the Plutonium Finishing Plant
<b>Narrative Response to Need</b>	Testing and analysis of polycubes is needed to better understand composition and off-gassing due to radiolysis. This information will lead to optimized treatment methods for polycubes. This Science need has no associated Technology need.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	DDFA through its Lead laboratory affiliate and in coordination with the Nuclear Materials Focus Area will coordinate with the EM Science Program for upcoming solicitations to incorporate this need for science investigation.

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted

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### SIMILAR NEEDS

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None identified.

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD031
<b>Need Title</b>	Non-Intrusive Detection of Pipe Contents for 233-S
<b>Narrative Response to Need</b>	Non-intrusive methods are needed to detect liquids or explosive gases in closed piping systems within the 233-S Facility. Methods that produce heat or a potential spark are not acceptable due to the risk of an explosion. The pipes range in size from 0.5 in. to 7.0 in. outside diameter of schedule 10 or schedule 40 stainless steel; may be vertical or horizontal, free standing or against walls or floors; and, are in congested areas.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	DDFA will investigate alternative techniques such as infrared and ultrasonic detection for pipe contents.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Associated Particle Imaging Development	413
Non-Intrusive Liquid Level Detection System	2403

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
Isolok Sampler	D&D Tech. Notebook

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### SIMILAR NEEDS

<b>Site Need ID</b>	<b>Need Title</b>
AL-00-01-02-DD	Characterization Technologies for Verifying Presence or Absence of Contamination in Structures Scheduled for D&D
NV09-0001-09	Nonintrusive Surveys in Pipes and Vessels

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD031-S
<b>Need Title</b>	Polystyrene Off-Gas Analysis for the Plutonium Finishing Plant
<b>Narrative Response to Need</b>	Testing and analysis is needed to better understand off-gas rates of the polystyrene cubes. If off-gassing is sufficient slow and if the polycubes contain low concentrations of plutonium, then it may be possible to forego processing and still meet storage and WIPP requirements. This Science need is associated with RL-DD030-S, but is not associated with a Technology need.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	DDFA through its Lead laboratory affiliate and in coordination with the Nuclear Materials Focus Area will coordinate with the EM Science Program for upcoming solicitations to incorporate this need for science investigation.

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted

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### SIMILAR NEEDS

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None identified.

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD032
<b>Need Title</b>	Contamination Fixative for 233-S
<b>Narrative Response to Need</b>	Hanford seeks improved fixatives to affix loose and airborne contamination on the interior and exterior of contaminated pipes and vessels within the 233-S Facility. The fixative must be easy to apply evenly within a 1.0 to 7.0 inch outside diameter pipe. There must be a means of detecting whether the fixative is wet or dry. In addition the application process must be amenable to congested areas and to areas with some airflow.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	During the Interim Safe Storage of the 105-C Reactor at Hanford, surface stabilization techniques (fixatives) were demonstrated. Subsequent to the Richland demonstrations, both Rocky Flats and Savannah River have utilized the MasterLee Instacote™. The 321-M LSDDP at Savannah River is investigating a series of improved fixatives (ALARA 1146 Cavity Decon) which may apply to this need, as well as RL-DD07, RL-DD032 and RL-DD045. Rocky Flats has tested Sugar Fogging for stabilization of plutonium oxides, which may be applicable to Hanford's need. FIU-HCET has also completed an assessment of strippable coatings for D&D applications.

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted

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### NON-OST TECHNOLOGIES

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Technology Title	Data Source
Passive Aerosol Generator (PAG)	FIU LSDDP TIS

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### SIMILAR NEEDS

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Site Need ID	Need Title
AL-00-01-04-DD	Fixation of Airborne and Removable Contamination
AL-07-01-13-DD	Decontamination of Difficult Access Interior Contamination
OH-M903	Method for Controlling Off-Gassing and Removable Contamination from Tritium Piping
RF-DD03	Improved Interior Airborne Particulates Control

## **DDFA Need Technical Responses**

SR00-4012      Stabilization of Contaminated Equipment/Components/Surfaces

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD032-S
<b>Need Title</b>	Measurement of Moisture Content in Plutonium Oxides and Other Materials for the Plutonium Finishing Plant
<b>Narrative Response to Need</b>	Hanford seeks improved understanding of how to measure moisture held by plutonium oxides (and other materials such as uranium oxides and mixed oxides). This knowledge would lead to improved, safer methods of testing moisture content. This Science need is not associated with a Technology need.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	DDFA through its Lead laboratory affiliate will coordinate with the EM Science Program for upcoming solicitations to incorporate this need for science investigation.

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted

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### SIMILAR NEEDS

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Site Need ID	Need Title
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AL-09-01-04-DD-S	Methodology for Effective D&D of Large Environmental Sites
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## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD033
<b>Need Title</b>	Field Screening for Hazardous Materials for 105-F and 105-DR Reactors
<b>Narrative Response to Need</b>	Hanford seeks a near real-time, in situ method to detect, quantify, and locate RCRA metals, PCBs, and sodium dichromate. The method should be applicable to underground concrete structures to determine if they must be remediated or to verify that regulatory limits have been met for leaving in place. Analysis methods that are not in situ, but can be applied in the field must provide at most a 2 day turn around.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	INEEL LSDDP successfully demonstrated Alloy (TMS# 2397) and PCB (TMS#2398) analyzers in FY99.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Lead Paint Analyzer	2317
NITON 800 Series Multi-Element Spectrum Analyzer	2397
PCB Analyzer	2398
Portable X-Ray Fluorescence Spectrometer	1790
Portable X-Ray, K-Edge Heavy Metal Detector	134

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
NOMAD Plus and MicroNOMAD Portable Spectroscopy Systems	FIU LSDDP TIS

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### SIMILAR NEEDS

<b>Site Need ID</b>	<b>Need Title</b>
AL-00-01-02-DD	Characterization Technologies for Verifying Presence or Absence of Contamination in Structures Scheduled for D&D
ID-7.2.17	Field Screening of Samples and Equipment Surfaces to Identify PCB Contamination
ORDD-12	Improved Characterization of Buildings and Facilities

## **DDFA Need Technical Responses**

RF-DD02	High Speed Integrated Characterization System for (1) Radioactive, (2) Hazardous and (3) Toxic Contamination
RF-DD04	Improved Measurement Techniques for Free Release of Property and Salvageable Equipment Contaminated with Radionuclides
SR00-4002	Characterization of Contaminated Surfaces



## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD033-S
<b>Need Title</b>	Model for 324 Building Waste
<b>Narrative Response to Need</b>	A better understanding of the relationship between cesium-137 and measured dose rates in non-homogeneous, randomly loaded containers is needed in order to develop proper segregation of waste for disposal. A computer model is desired. This Science need is not associated with a Technology need.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	DDFA through its Lead laboratory affiliate will coordinate with the EM Science Program for upcoming solicitations to incorporate this need for science investigation.

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted

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### SIMILAR NEEDS

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None identified.

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD034
<b>Need Title</b>	Remote/Robotic Technologies for CDI
<b>Narrative Response to Need</b>	<p>This need represents a general need for remote technologies for access and deployment of equipment and tools with the 221-U Facility. Specific systems deployed via these remote deployment systems/platforms are covered in separate need statements. Specific needs include sample collection (RL-DD040), deployment of sensor packages (NDA) or characterization tools (RL-DD035, RL-DD036, RL-DD039), size reduction (RL-DD048), void space filling and waste emplacement.</p> <p>Remote deployment systems/platforms must be capable of operating in high-radiation environments and allow for long-length (distance) deployments. The remote deployment systems must be integrated with a crane-deployable manipulator system.</p> <p>This need also appears to be requesting the manipulator system itself. The manipulator requirements include a payload capacity of approximately 200 pounds, be easily maintainable, have readily replaceable parts, and have the ability to accept a variety of end-effectors. In addition, it must be deployable on one of the 10-ton auxiliary hoists, and work in concert with the 75-ton crane.</p>
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	DDFA supports the development of robotic and remote systems for D&D through the Robotics Technology Development Program (RBX). Technology development projects ongoing and proposed by RBX in support of D&D include: Compact Remote Operator Console (TMS # 2180); Remote Underwater Characterization System (RUCS) (TMS # 2151); CDI Remote Characterization System (Andros; TMS # 2178); Low Cost D&D System (TMS # TBD); Equipment Pit D&D System (TMS # 2181). In addition, the DDFA has supported a study by Argonne National Laboratory entitled " A Survey of Commercially Available Manipulators, End-Effectors, and Delivery Systems for Reactor Decommissioning Activities," ANL/D&D/TM-95/1, which may provide additional information on Radiation Hardened Robotic Systems for use at Richland.

## DDFA Need Technical Responses

### OST TECHNOLOGIES

Technology Title	Technology ID
CDI Remote Characterization System	2178
Robotic Platform for B-Cell Cleanout	2919
Robotics Crawler	2328

### NON-OST TECHNOLOGIES

Technology Title	Data Source
ARTISAN (heavy duty hydraulic manipulators)	D&D Tech. Notebook
Mobile Platform, Heavy-Duty, Multiple Manipulator Robot	FIU LSDDP TIS
NEATER (Nuclear Engineered Advanced Robots)	D&D Tech. Notebook
Portable Articulated Arm Deployment System (PAADS)	D&D Tech. Notebook - ANS Robotics/Remote Systems

### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-12-DD	Remote-Handled Size Reduction Technology
AL-07-01-13-DD	Decontamination of Difficult Access Interior Contamination
CH-DD08-99	Remote Decontamination of In-ground Concrete Structures
CH-DD11-99	Remote Characterization of In-ground Concrete Structures
ID-7.2.08	Robotics for D&D
ID-7.2.12	Cutting Equipment for Large Items in Above Ground or Underground Structures & Underwater
ID-7.2.19	Remote/Robotic Technologies for Access and Deployment of Characterization & Sampling Tools

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD034-S
<b>Need Title</b>	Thermodynamic Data for Plutonium Nitrate
<b>Narrative Response to Need</b>	There is a need for improved knowledge of the thermodynamic properties of plutonium nitrate in order to more effectively design and optimize processes for the conversion of the material to a more stable form for long-term storage. Knowledge is needed of the Gibbs free energies, ionic strengths, pH, and other ions of various process streams. This Science need is associated with a non-DDFA Technology need RL-99-003-NM.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	The EM Science Program as incorporated this need into its upcoming solicitations for science investigation.

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted

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### SIMILAR NEEDS

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None identified.

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD035
<b>Need Title</b>	Visual/Spatial Imaging for CDI
<b>Narrative Response to Need</b>	In order to support the 221-U Facility ROD, an accurate visual record of the facility is needed to effectively plan characterization operations. Hanford requires improved, remotely deployed visual imaging systems. The system must be able to withstand high radiation environments and environments containing process chemicals, acids, and caustic solutions. The system must be deployable up to 800 ft and have an access size of 24 inches. Some deployments permit larger platforms up to 10 feet, whereas there are also extremely small access requirements in congested areas limited to 6 inches. Resulting images/maps must provide at 1 inch resolution.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	DDFA activities in support of the CDI may provide solutions to this need. This need is specific to visual and spatial imaging (I.e., improved camera systems). Hanford has deployed the GammaCam (TMS# 1840) and the 3-D version GammaCam (TMS# 2402) in FY99. The EM Science Program also supports two projects that may lead to a new generation of gamma imaging systems. These projects are #60141 "Gamma Ray Imaging for Environmental Remediation" and #65015 "Three-Dimensional Position-Sensitive Germanium Detectors."

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### OST TECHNOLOGIES

Technology Title	Technology ID
Interactive, Computer-Enhanced, Remote-Viewing System	33

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Circumspector	D&D Tech. Notebook
TV3 Stereoscopic TV	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
ID-7.2.19	Remote/Robotic Technologies for Access and Deployment of Characterization & Sampling Tools
SR00-2031	Develop Remote Technology to Improve DWPF Operations

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD035-S
<b>Need Title</b>	Neutron Detection for Sorting Remote-Handled Radioactive Waste into TRU vs Non-TRU
<b>Narrative Response to Need</b>	Improved understanding of neutron-gamma discrimination in scintillator materials is needed in order to develop a new class of field-applicable neutron detectors. This Science need is associated with RL-DD05 and RL-SS18 (non-DDFA)
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	DDFA through its Lead laboratory affiliate and in coordination with the Nuclear Materials, Mixed Waste, and Subsurface Contaminants Focus Areas will coordinate with the EM Science Program for upcoming solicitations to incorporate this need for science investigation.

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### OST TECHNOLOGIES

Technology Title	Technology ID
Associated Particle Imaging Development	413
Decommissioning In-Situ Plutonium Inventory Monitor (DISPIM)	2241
Long Range Alpha Detection for Component Monitoring	2382
Mobile Characterization System for Large Crates	2959
Segmented Gate System	2158
Standard Waste Box Crate Counter	2917
Waste Inspection Tomography (WIT)	259

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
DrumScan Modular Segmented Gamma Scanner	D&D Tech. Notebook
IonSens Conveyor Monitor	D&D Tech. Notebook
IPAN/GEA (imaging passive-active neutron/gamma energy assay) Crate System	D&D Tech. Notebook
IPAN/GEA (imaging passive-active neutron/gamma energy assay) Drum System	D&D Tech. Notebook

## DDFA Need Technical Responses

Waste Assay Systems

D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-08-DD	Segregation Technology to Separate TRU and Non-TRU and Low Level and Free Release Waste
AL-00-01-11-DD	Increased Efficiency Waste Characterization Assay Methods
AL-07-01-14-MW	Characterization and Segregation of TRU Waste Now Stored in Fiberglass Reinforced Plywood Boxes LANL
AL-08-01-17-MW	Certiifiability of Newly Generated TRU Waste
OH-WV-901	Characterization of Low Level and Transuranic Waste
OH-WV-909	Remote Handled Waste Processing
OK99-06	Mobile Non-Destructive Assay for TRU Waste Boxes
RF-DD01	Improved Pre-D&D Characterization for Distinguishing Between TRU and Low-Level Contamination
SR00-4011	Waste Characterization

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD036
<b>Need Title</b>	General Radiation Surveys of Concrete and Equipment in the Materials Processing Facilities for CDI
<b>Narrative Response to Need</b>	Technologies are needed that will provide (1) general radiation dose, (2) TRU levels in or on equipment and piping using NDA and nondestructive evaluation (NDE), and (3) spatially locate hot spots. The radiation survey technologies must provide in situ, near real-time detection of alpha, beta and gamma radiation at least to the onsite laboratory detection limits (onsite laboratory detection limits are 10,000 pCi/g for alpha, 30,000 pCi/g for beta, while offsite laboratory detection limits are 10 and 15 pCi/g for alpha/beta, respectively). The technologies must be compatible with remote deployment systems (RL-DD034) for application in confined and congested areas and/or high radiation fields (up to 500 R/hr, more typically up to 10 R/hr).
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	DDFA activities in support of the CDI may provide solutions to this need. Hanford has deployed the AIL Systems' 2-D GammaCam (TMS# 1840) and the 3-D version Gamma Modeler (TMS# 2402) in FY99. DDFA will also support a demonstration of a Russian Gamma Camera in FY00.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
3-D Visual and Gamma Ray Imaging System (Gamma Modeler)	2402
Gamma Cam (TM) Radiation Imaging System	1840
In Situ Object Counting System	2098
Indoor Radiation Mapping Using Laser Assisted Ranging and Data System (LARADS)	1946
Internal Duct Characterization System	42
Portable X-Ray, K-Edge Heavy Metal Detector	134



## DDFA Need Technical Responses

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Amandin Surface Counter	D&D Tech. Notebook
Beta Contamination Detector with High Gamma Filtration/Rejection	FIU LSDDP TIS
Portable Survey Meters	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-02-DD	Characterization Technologies for Verifying Presence or Absence of Contamination in Structures Scheduled for D&D
CH-DD11-99	Remote Characterization of In-ground Concrete Structures
ID-7.2.06	Remote Characterization for Building Release, Large Area Surface Soil Characterization, and Characterization of Sumps, Debris, Underwater Areas, and Buried Pipes and Utilities
NV09-0001-09	Nonintrusive Surveys in Pipes and Vessels
NV10-0001-10	Improved Detection and Characterization of Radioactive Contamination on Large Concrete and Metal Surfaces
OH-M901	Improved Facility Survey Techniques
OH-WV-913	Far-Field Radioactivity Measurement
ORDD-01	Improved Characterization of Equipment, Machinery, Fabricated Metals & Other Materials
ORDD-12	Improved Characterization of Buildings and Facilities
RF-DD01	Improved Pre-D&D Characterization for Distinguishing Between TRU and Low-Level Contamination
RF-DD02	High Speed Integrated Characterization System for (1) Radioactive, (2) Hazardous and (3) Toxic Contamination
SR00-4002	Characterization of Contaminated Surfaces

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD036-S
<b>Need Title</b>	Modeling Thermodynamic Properties
<b>Narrative Response to Need</b>	A better understanding of the thermodynamic properties of many chemicals found throughout the DOE complex is needed in order to develop a new class of deactivation and decontamination tools. The capability to better estimate thermodynamic properties for chemicals that do not have measured properties is needed. Improvements are needed in theoretical methods including basis sets, relativistic effects, solvation effects, and force field development. This Science need has no corresponding Technology need.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	A number of EM Science Program projects may provide added insight into the thermodynamic properties of hazardous chemicals and radionuclides. DDFA will further investigate the portfolio of EMSP projects. One project of particular potential is #60363 "Optimization of Thermochemical, Kinetic, and Electrochemical Factors Governing Partitioning of Radionuclides during Melt Decontamination of Radioactively Contaminated Stainless Steel"

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted

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### SIMILAR NEEDS

<b>Site Need ID</b>	<b>Need Title</b>
ID-S.2.05	Understanding the Physics and Chemistry of Concrete Decontamination
ID-S.2.06	Understanding the Physics and Chemistry of Metal Decontamination

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD037
<b>Need Title</b>	Liquids Detection for CDI
<b>Narrative Response to Need</b>	Hanford seeks a non-intrusive method for detecting and identifying liquids in tanks and pipes. Liquid detection must be performed in highly congested areas, and in areas containing radionuclide contamination (up to 500 R/hr, more typically up to 10 R/hr), therefore, it is desirable that the improved technique is compatible with remote deployment platforms (RL-DD034).
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	DDFA activities in support of the CDI may provide solutions to this need. Ultrasonic-based sensors should be investigated for application to this need.

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### OST TECHNOLOGIES

Technology Title	Technology ID
Non-Intrusive Liquid Level Detection System	2403

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-02-DD	Characterization Technologies for Verifying Presence or Absence of Contamination in Structures Scheduled for D&D
ID-7.2.06	Remote Characterization for Building Release, Large Area Surface Soil Characterization, and Characterization of Sumps, Debris, Underwater Areas, and Buried Pipes and Utilities
NV09-0001-09	Nonintrusive Surveys in Pipes and Vessels
ORDD-01	Improved Characterization of Equipment, Machinery, Fabricated Metals & Other Materials

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD038
<b>Need Title</b>	Liquids Characterization for CDI
<b>Narrative Response to Need</b>	Hanford seeks a non-intrusive or in situ sampling method to detect and quantify contaminants in liquids within tanks and pipes. The preferred method must be capable of performing in areas containing radionuclide contamination (up to 500 R/hr, more typically up to 10 R/hr). The improved technique must also be compatible with remote deployment platforms (RL-DD034) for deployment in highly congested areas. Specific contaminants of concern that must be detectable are listed in the need statement.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	This need may be addressed through the deployment of innovative "liquid characterization" tools demonstrated/deployed as part of the Canyon Disposition Initiative.

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### OST TECHNOLOGIES

Technology Title	Technology ID
Portable X-Ray, K-Edge Heavy Metal Detector	134

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Isolok Sampler	D&D Tech. Notebook

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### SIMILAR NEEDS

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None identified.

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD039
<b>Need Title</b>	Solids (Sediment/Sludge/Dust) Characterization for CDI
<b>Narrative Response to Need</b>	Hanford seeks improved methods to characterization of solids (sediments/sludge/dust). The improved methods must be capable of detecting, quantifying, and locating (spatially) contaminants of concern in the solids on floors and walls, and in equipment. The preferred method must be capable of performing in areas containing radionuclide contamination (up to 500 R/hr, more typically up to 10 R/hr). The improved technique must also be compatible with remote deployment platforms (RL-DD034) for deployment in highly congested areas. Specific contaminants of concern that must be detectable are listed in the need statement.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	Though the EM Science Program project #64979 "Basic Engineering Research for D&D of R. Reactor Storage Pond Sludge: Electrokinetics, Carbon Dioxide Extraction, and Supercritical Water Oxidation" is directed to the reactor spent fuel storage ponds, it may have application to this need.

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### OST TECHNOLOGIES

Technology Title	Technology ID
3-D Visual and Gamma Ray Imaging System (Gamma Modeler)	2402
NITON 800 Series Multi-Element Spectrum Analyzer	2397
PCB Analyzer	2398
Portable X-Ray Fluorescence Spectrometer	1790
Portable X-Ray, K-Edge Heavy Metal Detector	134

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Amandin Surface Counter	D&D Tech. Notebook
NOMAD Plus and MicroNOMAD Portable Spectroscopy Systems	FIU LSDDP TIS
Portable Survey Meters	D&D Tech. Notebook

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-02-DD	Characterization Technologies for Verifying Presence or Absence of Contamination in Structures Scheduled for D&D
ID-7.2.06	Remote Characterization for Building Release, Large Area Surface Soil Characterization, and Characterization of Sumps, Debris, Underwater Areas, and Buried Pipes and Utilities
ID-7.2.15	Field Screening of Paint/Painted Surfaces to Identify Contamination such as; PCB, Lead, and other RCRA Metals in the Paint
ID-7.2.19	Remote/Robotic Technologies for Access and Deployment of Characterization & Sampling Tools
NV10-0001-10	Improved Detection and Characterization of Radioactive Contamination on Large Concrete and Metal Surfaces
OH-M901	Improved Facility Survey Techniques
ORDD-01	Improved Characterization of Equipment, Machinery, Fabricated Metals & Other Materials
ORDD-12	Improved Characterization of Buildings and Facilities
RF-DD02	High Speed Integrated Characterization System for (1) Radioactive, (2) Hazardous and (3) Toxic Contamination
SR00-4002	Characterization of Contaminated Surfaces
SR00-4005	Characterization of Inaccessible Areas

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD04
<b>Need Title</b>	TRU Waste Fixatives for PFP
<b>Narrative Response to Need</b>	Hanford seeks durable (lasts 20-25 years) fixatives that can be easily applied to surfaces for containing dispersible (TRU) contaminants. The fixatives must also be easily removed and must be amenable to a variety of surfaces including gloveboxes, ducts, and pipes.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	During the Interim Safe Storage of the 105-C Reactor at Hanford, surface stabilization techniques (fixatives) were demonstrated. Subsequent to the Richland demonstrations, both Rocky Flats and Savannah River have utilized the MasterLee Instacote™. The 321-M LSDDP at Savannah River is investigating a series of improved fixatives (ALARA 1146 Cavity Decon) which may apply to this need, as well as RL-DD07, RL-DD032 and RL-DD045. Rocky Flats has tested Sugar Fogging for stabilization of plutonium oxides, which may be applicable to Hanford's need. FIU-HCET has also completed an assessment of strippable coatings for D&D applications.

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### OST TECHNOLOGIES

Technology Title	Technology ID
ALARA 1146 Strippable Coating	2314
NURES Nuclide Removal System	2937
Reactor Surface Contamination Stabilization (Reactor Stabilizer)	1839

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Passive Aerosol Generator (PAG)	FIU LSDDP TIS
Polyurea Spray Elastomers	D&D Tech. Notebook

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-04-DD	Fixation of Airborne and Removable Contamination
AL-07-01-13-DD	Decontamination of Difficult Access Interior Contamination
OH-M903	Method for Controlling Off-Gassing and Removable Contamination from Tritium Piping
RF-DD03	Improved Interior Airborne Particulates Control
SR00-4012	Stabilization of Contaminated Equipment/Components/Surfaces



## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD040
<b>Need Title</b>	Concrete Characterization for CDI
<b>Narrative Response to Need</b>	Hanford seeks improvements over the baseline methods for obtaining concrete core samples. The preferred technique must be non-intrusive or provide in situ sampling and analysis capabilities. The technology must be able to detect, quantify, and locate the potential contaminants listed in the need statement to the levels of detection provided. The technology must be capable of performing in areas containing radionuclide contamination (up to 500 R/hr, more typically up to 10 R/hr) and compatible with remote deployment platforms (RL-DD034) for deployment in highly congested areas.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	DDFA activities in support of the CDI may provide solutions to this need. The Pioneer Concrete Sampling System developed by NASA's Jet Propulsion Laboratory and Carnegie Mellon University may be an ideal candidate for this need (see non-OST Technologies below).

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### OST TECHNOLOGIES

Technology Title	Technology ID
Remote Concrete Coring	2329

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Large Area Survey Monitor	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-02-DD	Characterization Technologies for Verifying Presence or Absence of Contamination in Structures Scheduled for D&D
ID-7.2.19	Remote/Robotic Technologies for Access and Deployment of Characterization & Sampling Tools
SR00-4005	Characterization of Inaccessible Areas
SR00-4007	Characterization of Volumetrically Contaminated Surfaces

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD041
<b>Need Title</b>	Capsule Integrity Assessment Method for WESF
<b>Narrative Response to Need</b>	<p>Hanford seeks a means to effectively determine the integrity of the cesium/strontium capsules stored in the Waste Encapsulation Storage Facility (WESF). The current method used to determine the capsule integrity is referred to as the Inner Capsule Movement Test (ICMT; a.k.a., "clunk test"). This method requires manual rotation of the capsule, which results in the inner capsule "clunking" against the outer capsule. The absence of a "clunk" suggests a breach in the inner capsule wall resulting in liquid within the annulus between the two capsules. The preferred solution should be automated to remove workers from this potentially high-radiation environment. Furthermore, the preferred solution should be capable of early detection of inner capsule structural wear. Ideally, the system should also be capable of detecting the presence of radioactive material (cesium chloride and/or strontium fluoride) within the capsule annulus.</p> <p>The system must be operable in high-radiation environments and may require remote, underwater deployment capabilities. This need is tied to RL-DD01 and Science need RL-DD027-S.</p>
<b>Focus Area</b>	NMFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	Commercial radiography (x-ray), ultrasonic, or possibly infrared coupled with a robotic delivery system such as RUCS TMS# 2151 or Robotic End Effector for Inspection and Sampling of Storage Tanks TMS#278 may be feasible solution for this need. Further investigation is required to determine the capabilities of commercial inspection methods for underwater applications and to integrate sensors with a viable deployment system.

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### OST TECHNOLOGIES

Technology Title	Technology ID
Robotic End Effector for Inspection and Sampling of Storage Tanks	278

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Underwater Remotely Operated Detectors	FIU LSDDP TIS

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
ID-7.2.20	Quantitative Underwater Radionuclide Characterization of Structures, Equipment, and Contaminated Pool Walls

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD044
<b>Need Title</b>	Cesium and Strontium Removal From K3 Duct at WESF
<b>Narrative Response to Need</b>	Hanford seeks a remote method to decontaminate gross levels of cesium/strontium in the K3 Duct at the WESF in an effort to reduce radiation exposure levels and to ease maintenance.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	The use of the 3M Empore Membrane Filtration System or the TRUEX/SREX in conjunction with standard flushing practices may provide cost and waste reduction benefits. This need will be reviewed by AEA to determine if applicable solutions currently exists and are being implemented outside the U.S.

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### OST TECHNOLOGIES

Technology Title	Technology ID
In-Situ Pipe Decontamination System	2379
Internal Duct Characterization System	42

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Scarab III Remote Vehicle	D&D Tech. Notebook - ANS Robotics/Remote Systems
Thermal Spray Vitrification	tbd (AEA?)

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-07-01-13-DD	Decontamination of Difficult Access Interior Contamination
ID-7.2.24	Decontamination of Metal Debris
ID-7.2.25	Decontamination of Metal Pipes
RF-DD10	Improve Decontamination of Non-Porous Building Property and Structures

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD045
<b>Need Title</b>	Fixatives for K3 Duct at WESF
<b>Narrative Response to Need</b>	Hanford seeks durable (lasts 20-25 years) fixatives to fix and secure cesium/strontium contamination within the WESF K3 Duct. The fixative must be removable to allow final disposition of the contaminants in the future. The only access to the duct is through openings inside one of the hot cells. Therefore, application of the fixative may require remote deployment methods.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	During the Interim Safe Storage of the 105-C Reactor at Hanford, surface stabilization techniques (fixatives) were demonstrated. Subsequent to the Richland demonstrations, both Rocky Flats and Savannah River have utilized the MasterLee Instacote™. The 321-M LSDDP at Savannah River is investigating a series of improved fixatives (ALARA 1146 Cavity Decon) which may apply to this need, as well as RL-DD07, RL-DD032 and RL-DD045. Rocky Flats has tested Sugar Fogging for stabilization of plutonium oxides, which may be applicable to Hanford's need. FIU-HCET has also completed an assessment of strippable coatings for D&D applications.

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### OST TECHNOLOGIES

Technology Title	Technology ID
ALARA 1146 Strippable Coating	2314
Reactor Surface Contamination Stabilization (Reactor Stabilizer)	1839

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Passive Aerosol Generator (PAG)	FIU LSDDP TIS
Polyurea Spray Elastomers	D&D Tech. Notebook

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-04-DD	Fixation of Airborne and Removable Contamination
AL-07-01-13-DD	Decontamination of Difficult Access Interior Contamination
OH-M903	Method for Controlling Off-Gassing and Removable Contamination from Tritium Piping
RF-DD03	Improved Interior Airborne Particulates Control
SR00-4012	Stabilization of Contaminated Equipment/Components/Surfaces

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD046
<b>Need Title</b>	Clean-Out of Isolated Piping Systems in Building 324
<b>Narrative Response to Need</b>	An improved method of decontaminating isolated pipes, piping systems, and tanks is needed. Much of this equipment is inaccessible due to their location in high-radiation areas, or because they are enclosed in vaults and/or encased in concrete. The pipes range in diameter from 0.5 to 2.0 inches. The approved system must not cause dispersion of the contaminants. The focus in the 324 facility at this time is on contaminant removal from for pipes and tanks to support facility closure, rather than treatment of contaminants.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	LANL is investigating the use of foam cleaning which may apply to this need. The DDFA supports an SBIR Program project entitled "A Cost Effective and Mobile Ultrahigh-Pressure Cryogenic System for Decontamination and Decommissioning" that may assist in developing a viable solution for this need. FIU is also developing pipe decontamination systems for D&D applications.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
In-Situ Pipe Decontamination System	2379
Liquid Membrane System for Removal and Concentration of Transuranic Elements	277
Portable Concentrator for Processing Plutonium Contaminated Solutions	1454
Removal of Contaminants from Equipment and Debris, and Waste Minimization Using TECHXTRACT	1450
Specialized Separation Utilizing 3M Membrane Technology	1543
TRUEX/SREX	347

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
CORD-UV	D&D Tech. Notebook
Decoha Pipe Decontamination	FIU LSDDP TIS

## DDFA Need Technical Responses

Decontamination for Decommissioning (DFD) Process	D&D Tech. Notebook
Model 4 Tube Cleaner	FIU LSDDP TIS
Pipe Decontamination System - FIU-HCET	FIU LSDDP TIS
Scarab III Remote Vehicle	D&D Tech. Notebook - ANS Robotics/Remote Systems

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-07-01-13-DD	Decontamination of Difficult Access Interior Contamination
ID-7.2.25	Decontamination of Metal Pipes
RF-DD10	Improve Decontamination of Non-Porous Building Property and Structures



## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD047
<b>Need Title</b>	Remote Viewing for Hot Cells in Buildings 324 and 327
<b>Narrative Response to Need</b>	Hanford is seeking upgrades to their current system for remote viewing within the Building 324/327 hot cells. Upgrades desired include high-resolution, 3-D, color imaging.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	The "Robotic Platform for B-Cell Cleanout" should provide partial or solution to this need.

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### OST TECHNOLOGIES

Technology Title	Technology ID
Interactive, Computer-Enhanced, Remote-Viewing System	33
Operator Interface for Robotic Applications	281
Robotic Platform for B-Cell Cleanout	2919

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Circumspector	D&D Tech. Notebook
Environmentally Robust LADAR for 3D Imaging	D&D Tech. Notebook - ANS Robotics/Remote Systems
Photogrammetry	FIU LSDDP TIS
Scissors; Camera Deployment Mechanism	D&D Tech. Notebook
TV3 Stereoscopic TV	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
ID-7.2.19	Remote/Robotic Technologies for Access and Deployment of Characterization & Sampling Tools
SR00-2031	Develop Remote Technology to Improve DWPF Operations

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD048
<b>Need Title</b>	Volume Reduction of Equipment for CDI
<b>Narrative Response to Need</b>	Hanford seeks improved in situ volume reduction of the equipment in order to reduce the volume of waste handled, thereby reducing the potential exposure to the workers. Improved volume reduction is needed for equipment on the canyon deck and in the process cells of the 221-U Facility, which consists of large carbon steel and stainless steel equipment used in processing spent nuclear fuel. The equipment includes tanks, pulsers, agitators, centrifuges, concentrators and dissolvers. The preferred treatment method, volume reduction through direct compaction, will minimize internal void spaces and create optimal shapes for final disposal. The technology is needed for both in-cell and freestanding equipment as large as 13 ft x 18 ft x 20 ft high. (Note that separate technologies may be acceptable for freestanding and in-cell equipment volume reduction.) Any volume reduction technology must operate without compromising the structural integrity or seismic loading of the building.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	DDFA has sponsored a number of "size" reduction technologies, but no technologies for direct volume reduction through compaction. Also, for filling void spaces, Hanford may consider Urethane Foam Void Filling (TMS# 1816) and Low-Density Cellular Concrete Void filling (TMS# 1846).

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### OST TECHNOLOGIES

Technology Title	Technology ID
Laser Cutting and Size Reduction	1477

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### NON-OST TECHNOLOGIES

No Non-OST technologies have been identified and/or accepted

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD049
<b>Need Title</b>	Waste Encapsulation and Stabilization for CDI
<b>Narrative Response to Need</b>	<p>If the Canyon Disposal Initiative (CDI) record of decision is to use the 221-U Facility as a waste disposal site, improved methods of waste encapsulation and stabilization will be needed in order to meet waste disposal site requirements. Requirements include filling of void spaces in equipment and around waste packages to avoid subsidence. Stabilization of the facility structure is also required. Needs RL-DD050 and RL-DD051 also address aspects of structural stability of the 221-U facility if used as a waste disposal site.</p> <p>The encapsulation and stabilization technology must fill void spaces between waste packages, and be usable on a large area scale. The technology must be usable in a layered manner. As waste packages are layered within the facility, the encapsulation/stabilization technology can be applied to provide a surface for the next layer of waste and serve as a continuous filler as multiple layers are added (no breaks in the material used). It is also required that the technology not damage the facility structure. The process must meet RCRA treatment standards for encapsulation. The "technology" includes the application process, the material to be applied, and the means of ensuring that void spaces have been filled.</p>
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	Macroencapsulation technologies developed and demonstrated by the MWFA may apply. The Technical Response for this need will be coordinated with MWFA.

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### OST TECHNOLOGIES

Technology Title	Technology ID
Low-Density Cellular Concrete Void Filling	1846
Stabilized Contaminants using Envirocare Polymer Macroencapsulation	30
Urethane Foam Void Filling	1816

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted

## DDFA Need Technical Responses

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### SIMILAR NEEDS

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None identified.

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD05
<b>Need Title</b>	Characterization of Building 324 and 327
<b>Narrative Response to Need</b>	Hanford seeks a real-time, in-situ characterization system to differentiate between TRU and non-TRU waste. Characterization is required for material contained in a variety of configurations including drums, boxes, large containers, plastic bags, equipment (e.g. ducts/pipes), and processing facilities. In addition, the system should provide a verifiable means of segregating materials for free release. Remote methods are desired.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	The Portable X-Ray, K-edge Heavy Metal Detector (TMS # 134) developed by Ames Laboratory with support from CMST may also provide characterization capabilities to satisfy some aspects (pipe characterization) of this Richland need. This technology was demonstrated at the 321-M facility LSDDP at Savannah River. The ability to segregate TRU materials from non-TRU and LLW from free release waste is a need recognized across the complex. R&D opportunities exist to develop systems similar to Thermo NUtech's Segmented Gate System, which has been used primarily to segregate uranium-contaminated soils and debris. The DDFA is supporting initial investigation into integrated segregation systems and sensors with the Environmental Measurements Laboratory.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Internal Duct Characterization System	42
Mobile Characterization System for Large Crates	2959
Pipe Crawler Internal Piping Characterization System	1810
Pipe Explorer (TM) System	74
Portable X-Ray, K-Edge Heavy Metal Detector	134
Segmented Gate System	2158
Small Pipe Characterization System (SPCS)	43
Standard Waste Box Crate Counter	2917
Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)	97

## DDFA Need Technical Responses

### NON-OST TECHNOLOGIES

Technology Title	Data Source
DrumScan Modular Segmented Gamma Scanner	D&D Tech. Notebook
IonSens Conveyor Monitor	D&D Tech. Notebook
IPAN/GEA (imaging passive-active neutron/gamma energy assay) Crate System	D&D Tech. Notebook
IPAN/GEA (imaging passive-active neutron/gamma energy assay) Drum System	D&D Tech. Notebook
Pipe Walker	FIU LSDDP TIS
Versatrax; Remote Pipe Inspection	D&D Tech. Notebook
Waste Assay Systems	D&D Tech. Notebook

### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-08-DD	Segregation Technology to Separate TRU and Non-TRU and Low Level and Free Release Waste
AL-00-01-11-DD	Increased Efficiency Waste Characterization Assay Methods
AL-07-01-14-MW	Characterization and Segregation of TRU Waste Now Stored in Fiberglass Reinforced Plywood Boxes LANL
AL-08-01-17-MW	Certifiability of Newly Generated TRU Waste
CH-DD11-99	Remote Characterization of In-ground Concrete Structures
ID-7.2.06	Remote Characterization for Building Release, Large Area Surface Soil Characterization, and Characterization of Sumps, Debris, Underwater Areas, and Buried Pipes and Utilities
OH-WV-901	Characterization of Low Level and Transuranic Waste
OK99-06	Mobile Non-Destructive Assay for TRU Waste Boxes
ORDD-01	Improved Characterization of Equipment, Machinery, Fabricated Metals & Other Materials
ORDD-12	Improved Characterization of Buildings and Facilities

## **DDFA Need Technical Responses**

RF-DD01	Improved Pre-D&D Characterization for Distinguishing Between TRU and Low-Level Contamination
SR00-4002	Characterization of Contaminated Surfaces
SR00-4005	Characterization of Inaccessible Areas
SR00-4011	Waste Characterization

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD050
<b>Need Title</b>	Sealant Technologies for CDI
<b>Narrative Response to Need</b>	If the Canyon Disposal Initiative (CDI) record of decision is to use the 221-U Facility as a waste disposal site, expansion and construction joints in the facility will require sealing in order to ensure no leakage from the disposal site to the environment. The sealant must be long lived (e.g., 500-year life) and function in or on joints that will expand or contract with temperature. The sealant will likely need to meet the requirements for RCRA-compliant disposal site.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	The development or identification of commercially available viable sealant technologies will be coordinated with the Subsurface Contaminants Focus Area technical team responsible for barrier technologies.

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted

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### SIMILAR NEEDS

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None identified.



## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD051
<b>Need Title</b>	High Profile Surface Barrier for CDI
<b>Narrative Response to Need</b>	If the Canyon Disposal Initiative (CDI) record of decision is to use the 221-U Facility as a waste disposal site, a surface barrier design will be required that provides for steep side slopes (e.g., 1:3), and that protects against water infiltration, wind and water erosion, and plant, animal, and inadvertent human intrusion. The barrier should also channel precipitation away from the waste site and require little or no maintenance for a minimum of 500 years. The barrier design must meet RCRA requirements and applicable, relevant, and appropriate requirements (ARAR). Quantitative requirements will be a function of the contaminants remaining or disposed of in the facilities.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	The development or identification of commercially available viable surface barrier designs will be coordinated with the Subsurface Contaminants Focus Area technical team responsible for barrier technologies.

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted

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### SIMILAR NEEDS

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None identified.

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD052
<b>Need Title</b>	Long-Term Monitoring for CDI
<b>Narrative Response to Need</b>	If the Canyon Disposal Initiative (CDI) record of decision is to use the 221-U Facility as a waste disposal site, the facility will require long-term monitoring system capable of spatially locating and quantifying contaminants around and under the facility and exterior equipment to assure contaminants are contained. The technology must provide in situ, near real-time monitoring under the facility up to 45 feet below grade and 66 feet wide, and be monitorable from a centralized remote (up to 5 miles) facility.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	The development or identification of commercially available viable long-term monitoring system will be will be coordinated with the Subsurface Contaminants Focus Area technical team responsible for barrier technologies and the Characterization, Monitoring, and Sensor Technologies Crosscut Program. FIU currently supports an effort to develop remote surveillance technologies for facilities (and equipment) awaiting D&D.

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted

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### SIMILAR NEEDS

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None identified.

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD053
<b>Need Title</b>	Operational Modeling for CDI
<b>Narrative Response to Need</b>	<p>If the Canyon Disposal Initiative (CDI) record of decision is to use the 221-U Facility as a waste disposal site, Hanford will require a software system for modeling facility planning, operations, and waste loading and tracking. The system will be used to optimize facility space and loading, ensure safe disposal, and record contents. Functionally, the modeling software must incorporate all facility components including available facility resources (overhead cranes), incorporate structural loading and capacity, identify existing equipment, and track waste to be introduced into the facility for disposal. Input data will come from facility drawings, photographs, laser range finders, gamma cameras, site databases, waste inventories, and/or computer aided design (CAD) packages. The tool will be used to plan and test (simulate) waste loading methodologies to maximize the safe storage of waste in the facility, to track progress in the facility as waste is interred, and to document the inventory (identification, location, dose rate, dimension, weight, etc.) of the facility contents. Report generation is a requirement for the software so that a hard copy file may be maintained.</p>
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	DDFA will investigate using University Program grants to design and/or integrate a software system based on commercially available systems for modeling facility planning, operations, and waste loading and tracking. Some available systems that may be investigated and integrated into a final system are listed below.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Coherent Laser Vision System	94
Interactive, Computer-Enhanced, Remote-Viewing System	33
System for Tracking Remediation, Exposure, Activities and Materials (STREAM)	1947

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
Circumspector	D&D Tech. Notebook

## DDFA Need Technical Responses

Environmentally Robust LADAR for 3D Imaging

D&D Tech. Notebook -  
ANS Robotics/Remote  
Systems

Photogrammetry

FIU LSDDP TIS

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### SIMILAR NEEDS

Site Need ID	Need Title
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SR00-4010	Characterization Data Management
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## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD054
<b>Need Title</b>	Electronic Job Control System for the S&M Program
<b>Narrative Response to Need</b>	Hanford seeks a automated job control system for the development, tracking and routing of work packages associated with the S&M Program.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	The DDFA has no immediate plans to fund the development of site-specific software to perform administrative functions. This is typically an M&I function.

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted

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### SIMILAR NEEDS

<b>Site Need ID</b>	<b>Need Title</b>
SR00-4010	Characterization Data Management

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD055
<b>Need Title</b>	Remote Monitoring System Upgrades for the S&M Program
<b>Narrative Response to Need</b>	Hanford seeks system upgrades (hardware and software) to their remote monitoring system for the S&M Program.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	The DDFA has no immediate plans to fund hardware and software systems for remote monitoring. The FIU supported activity "Remote Surveillance of Facilities Awaiting D&D" and the INEEL developed "D&D and Remediation Optimal Planning System" may provide additional software capabilities to meet this Hanford need.

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted

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### SIMILAR NEEDS

<b>Site Need ID</b>	<b>Need Title</b>
SR00-2031	Develop Remote Technology to Improve DWPF Operations

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD056
<b>Need Title</b>	Facility Life Model for the S&M Program
<b>Narrative Response to Need</b>	Hanford seeks a predictive model for monitoring and planning S&M actions. The model must be applicable to variously constructed structures (e.g., dense thick concrete, wood, transite, metal siding) and roofs. The model must be able to predict future maintenance cost, especially the high-cost actions like roof replacement. The model must predict when preventive maintenance actions will be required for the structure and various equipment maintained during S&M (e.g., fans and compressors). The model must be fully integrated with the work planning system (RL-DD054). The model must be able to predict the cost of S&M over time versus the cost of decommissioning over time.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	FIU currently supports an effort to develop "Remote Surveillance of Facilities (and equipment) Awaiting D&D". DDFA will investigate expanding the FIU work to include aspects of this need. DDFA will also investigate commercially available systems through our cooperative agreement with AEA that may possibly assist in satisfying this need.

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted

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### SIMILAR NEEDS

<b>Site Need ID</b>	<b>Need Title</b>
SR00-4010	Characterization Data Management

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD057
<b>Need Title</b>	Long-Lived Roof Replacement for PUREX
<b>Narrative Response to Need</b>	Hanford seeks alternatives to current baseline roof replacement methods for the PUREX facility. The roof must withstand the local winds (up to 60+ mph), have a design life greater than 20 years, and require little or no maintenance over the design life.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	Previous work conducted by Jacobs Engineering for Bectel Hanford, Inc, as well as by FIU should provide some assistance to Richland in solving this need. Through AEA or FIU, DDFA will investigate commercially available products which may be applied to the PUREX and other Hanford facilities.

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted

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### SIMILAR NEEDS

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None identified.



## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD058
<b>Need Title</b>	Method to Control Deep Rooted Plants for the S&M Program
<b>Narrative Response to Need</b>	Hanford's S&M Program seeks a long-term, cost-effective method of controlling the growth of deep-rooted plants (e.g., Russian thistle) in contaminated soil.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	The Subsurface Contaminants Focus Area will be contacted to address this need.

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted

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### SIMILAR NEEDS

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None identified.

## DDFA Need Technical Responses

**Need ID Number** RL-DD059

**Need Title** Lead Decontamination for the S&M Program

**Narrative Response to Need** Hanford seeks an improved method to decontaminate approximately 5 million pounds of surface-contaminated lead. The lead must be decontaminated to free release for less than \$60/ton.

**Focus Area** DDFA

**Federal Focus Area POC** Duda, John (304-285-4217)

**Additional Comments**

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted

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### SIMILAR NEEDS

Site Need ID	Need Title
CH-MW03-99	Lead Removal, Segregation and Disposal
ID-7.2.14	Technology for Decontamination of Radionuclide Contaminated Lead Shot, Brick, and Sheeting for Free Release
SR00-4003	Material Recycle (Process Equipment, Metal, Steel, and Concrete)
SR00-4015	Decontamination of Small Components

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD06
<b>Need Title</b>	Decontamination of Building 324 and 327
<b>Narrative Response to Need</b>	Hanford seeks improved technologies for decontamination of equipment and facilities associated with Buildings 324/327 (B Cell). Decontamination applications are varied and include large-area, complex geometries, and hot spots. Materials needing decontamination include concrete and stainless steel surfaces (walls, floors, and ceilings), and equipment including pipes and ducts. Remote in-situ techniques that are faster, cheaper, and reduce generated waste are desired. Systems are needed that can clean strontium, cesium, uranium and TRU contaminated materials to free-release levels.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	The RL ASTD "Robotic Platform for B-Cell Cleanout" should provide partial or complete solution to this need. In addition, FIU-HCET is currently developing two technologies, which may benefit Richland in the area of piping decontamination; Ex-Situ Large-Bore Pipe Decontamination and Characterization System and In-Situ Pipe Decontamination System. FIU-HCET is also developing an Integrated Vertical and Overhead decontamination System that may provide a partial solution for the decontamination of metal and concrete surfaces.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Advanced Recyclable Media System	1971
Centrifugal Shot Blast System	1851
Concrete Grinder	2102
Concrete Shaver	1950
CORPEX Nuclear Decontamination Process	87
Ex-Situ Large Bore Pipe Decontamination and Characterization System	2375
High Productivity Vacuum Blasting	2224
Integrated Vertical and Overhead Decontamination System	2378
Laser Decontamination and Recycle of Metals	955

## DDFA Need Technical Responses

Paint Scaler	2952
Remotely Operated Scabbling	2099
Removal of Contaminants from Equipment and Debris, and Waste Minimization Using TECHXTRACT	1450
Robotic Platform for B-Cell Cleanout	2919
Rotary Peening with Captive Shot	1812
ROTO PEEN Scaler and VAC PAC System	1943
Soda Blasting Decontamination Process	369
Soft Media Blast Cleaning	1899
Steam Vacuum Cleaning	1780

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Betonamist	FIU LSDDP TIS
Cavity Plus Decon System	D&D Tech. Notebook
CO2 Pellet Cleaning	D&D Tech. Notebook
En-Vac Robotic Climber	FIU LSDDP TIS
Horizontal Surface Shot Blaster (EBE 350)	D&D Tech. Notebook
KSI Tentacle Manipulator	FIU LSDDP TIS
Laser	FIU LSDDP TIS
Laser ZAWCAD	FIU LSDDP TIS
Milling	FIU LSDDP TIS
Mobile Decon Systems (super-heated water, abrasive blasting, or mechanical rotary systems)	D&D Tech. Notebook
Mobile Decontamination Facility	D&D Tech. Notebook
RADCON LASER (ERASER)	FIU LSDDP TIS
Robotic Climber	FIU LSDDP TIS

## DDFA Need Technical Responses

Sivablast System

D&D Tech. Notebook -  
ANS Robotics/Remote  
Systems

Vertical Surface Shot Blaster (EBE 250 VHC)

D&D Tech. Notebook

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### **SIMILAR NEEDS**

<b>Site Need ID</b>	<b>Need Title</b>
AL-00-01-06-DD	Effective Decontamination of Concrete
AL-07-01-12-DD	Decontaminate and Decommission Radioactively Contaminated Facilities
AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals
CH-DD08-99	Remote Decontamination of In-ground Concrete Structures
ID-7.2.03	Decontamination of Concrete Walls, Floors, Ceilings, and Corners
ID-7.2.24	Decontamination of Metal Debris
ID-7.2.25	Decontamination of Metal Pipes
ID-7.2.26	Decontamination of Metal Walls, Floors, Ceilings, and Corners
ORDD-02	Improved Decontamination of Equipment, Machinery, Fabricated Metals & Other Materials
ORDD-03	Improved Decontamination of Facility Concrete and Painted Surfaces
RF-DD09	Improved Decontamination of Porous Surfaces in Preparation for Building Demolition
RF-DD10	Improve Decontamination of Non-Porous Building Property and Structures
SR00-4004	Decontamination of Contaminated Concrete

## DDFA Need Technical Responses

**Need ID Number** RL-DD060

**Need Title** Characterization for Waste Handling, Packaging and Processing for 233-S

**Narrative Response to Need** A real-time characterization and tracking system is needed to facilitate waste handling and packaging operations within the 233-S Facility. The system must provide an electronic means of characterizing and tracking waste as it is being packaged, and provide a go/no-go for packaging to allow rapid segregation and separation on an item by item basis. Waste streams expected from decommissioning the 233-S building include low-level waste, hazardous waste, mixed waste, TRU waste, TRU-mixed waste, nonhazardous/nonradioactive waste, and recyclable and excessable waste.

**Focus Area** DDFA

**Federal Focus Area POC** Duda, John (304-285-4217)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
Decommissioning In-Situ Plutonium Inventory Monitor (DISPIM)	2241
Long Range Alpha Detection for Component Monitoring	2382

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### NON-OST TECHNOLOGIES

No Non-OST technologies have been identified and/or accepted

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-08-DD	Segregation Technology to Separate TRU and Non-TRU and Low Level and Free Release Waste
AL-00-01-11-DD	Increased Efficiency Waste Characterization Assay Methods
AL-07-01-14-MW	Characterization and Segregation of TRU Waste Now Stored in Fiberglass Reinforced Plywood Boxes LANL
AL-08-01-17-MW	Certifiability of Newly Generated TRU Waste

## **DDFA Need Technical Responses**

AL-09-01-13-DD	On-Site Quantitation of Plutonium and Americium in Soil and Concrete Rubble from D&D Projects
OH-WV-901	Characterization of Low Level and Transuranic Waste
OH-WV-909	Remote Handled Waste Processing
RF-DD01	Improved Pre-D&D Characterization for Distinguishing Between TRU and Low-Level Contamination
SR00-4011	Waste Characterization

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD061
<b>Need Title</b>	Remote/Robotic Systems for 233-S
<b>Narrative Response to Need</b>	This is a general need for remote systems to perform D&D operations within the 233-S facility including remote characterization, stabilization, decontamination, dismantlement and packaging. Remote techniques are required to perform various tasks with many different end effectors/equipment in a highly congested, high alpha airborne contamination area. Specific D&D applications for which remote deployment systems are needed can be found in RL-DD030, RL-DD060 and RL-DD063. These applications include remote capabilities for working on floors (e.g., decontamination) as well as work on and among vertical piping and tanks. Work off the floor may include NDA characterization, decontamination or contamination stabilization on the pipe/tank exteriors, crimping and dismantling of pipes and tanks, loading of cut pipes and tanks into bags or other packages, and moving of packaged materials out of the contaminated area. The work area is approximately 8 feet by 26 feet and is 4 stories tall. There are no cranes available in the area.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	DDFA supports the development of robotic and remote systems for D&D through the Robotics Technology Development Program (RTDP). Technology development projects ongoing and proposed by RTDP in support of D&D include: Compact Remote Operator Console (TMS # 2180); Remote Underwater Characterization System (RUCS) (TMS # 2151); CDI Remote Characterization System (TMS # 2178); Low Cost D&D System (TMS # TBD); Equipment Pit D&D System (TMS # 2181). In addition, the DDFA has supported a study by Argonne National Laboratory entitled " A Survey of Commercially Available Manipulators, End-Effectors, and Delivery Systems for Reactor Decommissioning Activities," ANL/D&D/TM-95/1, which may provide additional information on Radiation Hardened Robotic Systems for use at Richland.

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### OST TECHNOLOGIES

Technology Title	Technology ID
CDI Remote Characterization System	2178
Dismantlement Processes Adaptation and Development	969
Dual Arm Work Platform Teleoperated Robotics System	1787
Dual-Point Impedance Control for Telerobotics	2173



## DDFA Need Technical Responses

Houdini-II Remotely Operated Vehicle System	2085
Houdini: Reconfigurable In Tank Mobile Robot	98
Light Duty Utility Arm	85
Mobile Robot Worksystem (ROSIE)	1799
Mobile Work Platform	2243
Modified Light Duty Utility Arm (MLDUA)	40
Pipe Cutting and Crimping System	2955
Robotic Platform for B-Cell Cleanout	2919
Robotics Crawler	2328
Size Reduction Machine	2395

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
ARTISAN (heavy duty hydraulic manipulators)	D&D Tech. Notebook
Dry Size Reduction System (DSRS)	FIU LSDDP TIS
Minescout	D&D Tech. Notebook
MiniTrac & MicroTrac; Remote Operated Crawlers	D&D Tech. Notebook
Mobile Platform, Heavy-Duty, Multiple Manipulator Robot	FIU LSDDP TIS
MURV-100 Teleoperated Robot System	D&D Tech. Notebook
NEATER (Nuclear Engineered Advanced Robots)	D&D Tech. Notebook
Pioneer Robot	D&D Tech. Notebook - ANS Robotics/Remote Systems

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-01-DD	Size Reduction Technology for TRU Mixed Waste
AL-00-01-12-DD	Remote-Handled Size Reduction Technology

## **DDFA Need Technical Responses**

AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals
CH-DD08-99	Remote Decontamination of In-ground Concrete Structures
CH-DD11-99	Remote Characterization of In-ground Concrete Structures
ID-7.2.06	Remote Characterization for Building Release, Large Area Surface Soil Characterization, and Characterization of Sumps, Debris, Underwater Areas, and Buried Pipes and Utilities
ID-7.2.08	Robotics for D&D
ID-7.2.19	Remote/Robotic Technologies for Access and Deployment of Characterization & Sampling Tools
ID-7.2.29	Remote Demolition of Machinery
ID-7.2.30	Remote Demolition of Metal Structures
ID-7.2.31	Remote Demolition of Piping
NV07-0001-03	Oversize TRU Waste Size Reduction
OH-WV-909	Remote Handled Waste Processing
OH-WV-910	Size Reduction of Components
ORDD-03	Improved Decontamination of Facility Concrete and Painted Surfaces
ORDD-06	Improved Remote Decontamination Methods
ORDD-07	Remote Dismantlement Methods
RF-DD01	Improved Pre-D&D Characterization for Distinguishing Between TRU and Low-Level Contamination
SR00-2031	Develop Remote Technology to Improve DWPF Operations
SR00-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD062
<b>Need Title</b>	Method to Capture Airborne Alpha Contamination for 233-S
<b>Narrative Response to Need</b>	Hanford seeks an improved method of capturing airborne (alpha) plutonium isotopes within the 233-S Facility while work is being performed, which poses a safety concern to workers. Fixatives and coatings will not meet this need. Workers disturb contamination and cause airborne which must be captured. Contamination could be released from events like pipes pulled from walls, fixative breached when tools fall, etc.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	EM Science Program projects #60163 "Investigation of Techniques to Improve Continuous Air Monitors Under Conditions of High Dust Loading in Environmental Setting" and #60474 "Ultrahigh Sensitivity Heavy Noble Gas Detectors for Long-Term Monitoring and Monitoring Air" may provide addition data to support technological advances for the development of improved methods to capture airborne alpha contamination.

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted

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### SIMILAR NEEDS

<b>Site Need ID</b>	<b>Need Title</b>
AL-00-01-04-DD	Fixation of Airborne and Removable Contamination
AL-07-01-13-DD	Decontamination of Difficult Access Interior Contamination
OH-M902	Decontamination Techniques for Tritiated Gloveboxes
OH-M903	Method for Controlling Off-Gassing and Removable Contamination from Tritium Piping
OH-M909	Automated Dust Suppression System
RF-DD03	Improved Interior Airborne Particulates Control

## **DDFA Need Technical Responses**

RF-DD17	Improved Dust Control Methods During Building Demolition for Structures that are not Free Releasable
SR00-4012	Stabilization of Contaminated Equipment/Components/Surfaces

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD063
<b>Need Title</b>	Decontamination of Transuranic Debris for 233-S
<b>Narrative Response to Need</b>	Cost-effective techniques are needed to reduce the amount of TRU waste (plutonium, americium, and neptunium). Improved methods to decontaminate metal equipment (pipes and tanks) and debris to LLW criteria are needed. The technique must maintain a critically safe geometry for all aspects of the decontamination (e.g., for bath processes this would include the bath, the liquid recycling, and all connecting piping) and must be capable of decontaminating pipe and tank segments up to 20 feet long.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	The DDFA supports an SBIR Program project entitled "A Cost Effective and Mobile Ultrahigh-Pressure Cryogenic System for Decontamination and Decommissioning" that may assist in developing a viable solution for this need. FIU is also developing a pipe decontamination systems for D&D applications.

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### OST TECHNOLOGIES

Technology Title	Technology ID
CORPEX Nuclear Decontamination Process	87
Decontamination Using Liquid Nitrogen Carrier with Solid Carbon Dioxide Pellet	1456
Laser Decontamination and Recycle of Metals	955
Removal of Contaminants from Equipment and Debris, and Waste Minimization Using TECHXTRACT	1450
ROTO PEEN Scaler and VAC PAC System	1943

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
CO2 Pellet Cleaning	D&D Tech. Notebook
CORD-UV	D&D Tech. Notebook
Decoha Pipe Decontamination	FIU LSDDP TIS
Decontamination for Decommissioning (DFD) Process	D&D Tech. Notebook

## DDFA Need Technical Responses

Integrated Characterization, Decontamination & Decommissioning Demonstration (ICD3)	FIU LSDDP TIS
Laser ZAWCAD	FIU LSDDP TIS
Model 4 Tube Cleaner	FIU LSDDP TIS
Pipe Decontamination System - FIU-HCET	FIU LSDDP TIS
Sivablast System	D&D Tech. Notebook - ANS Robotics/Remote Systems

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-07-01-13-DD	Decontamination of Difficult Access Interior Contamination
AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals
AL-09-01-13-DD	On-Site Quantitation of Plutonium and Americium in Soil and Concrete Rubble from D&D Projects
ID-7.2.24	Decontamination of Metal Debris
ID-7.2.25	Decontamination of Metal Pipes
ORDD-02	Improved Decontamination of Equipment, Machinery, Fabricated Metals & Other Materials
RF-DD10	Improve Decontamination of Non-Porous Building Property and Structures
SR00-4015	Decontamination of Small Components

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD064
<b>Need Title</b>	Characterization of the 105-F Spent Fuel Basin
<b>Narrative Response to Need</b>	Hanford requires improved characterization and visual imaging systems for material in the 105-F (and 105-H) spent nuclear fuel basin. The basin is filled with soil backfill, but has equipment, sludge and possibly other unknown materials in the bottom. The soil, material contents, and the basin walls all need to be characterized. Visual images and radioactive contamination levels are needed. Determination of RCRA metals and other hazardous materials is also desired.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	This need may require integration with Industry Programs and the Subsurface Contaminants Focus Area. Specific technologies that may assist in resolving this need, not listed below, include Steerable Distance Enhanced Penetrometer Delivery System (TMS# 317), Innovative Directional and Position Specific Sampling Technique (POLO; TMS# 316), and Fiber Optic/Cone Penetrometer System for Subsurface Heavy Metals Detection (TMS# 319).

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
3-D Visual and Gamma Ray Imaging System (Gamma Modeler)	2402
Compact Subsurface Investigation System	2153
Field Raman Spectrograph	873
Gamma Cam (TM) Radiation Imaging System	1840
Geophysical Data Fusion for Subsurface Imaging	290
High Resolution Subsurface Imaging and Neural Network Recognition	314
In Situ Object Counting System	2098

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-02-DD	Characterization Technologies for Verifying Presence or Absence of Contamination in Structures Scheduled for D&D
CH-DD11-99	Remote Characterization of In-ground Concrete Structures
ID-7.2.06	Remote Characterization for Building Release, Large Area Surface Soil Characterization, and Characterization of Sumps, Debris, Underwater Areas, and Buried Pipes and Utilities
ID-7.2.19	Remote/Robotic Technologies for Access and Deployment of Characterization & Sampling Tools
OK99-23	Field Surveillance Device for Detection of Radium-226 at Very Low Levels



## DDFA Need Technical Responses

**Need ID Number** RL-DD065

**Need Title** Backfill Removal and Segregation for the 105-F Spent Fuel Basin

**Narrative Response to Need** Hanford seeks improved methods to remove the soil backfill from the 105-F (and 105-H) basin and to segregate the soil into LLW for placement in containers and clean material. The depth of the basin is 22 feet. This need is related to RL-DD066 for removal and segregation of basin equipment.

**Focus Area** DDFA

**Federal Focus Area POC** Duda, John (304-285-4217)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
Modified Light Duty Utility Arm (MLDUA)	40
Remote Control Concrete Demolition System	2100
Robotic Platform for B-Cell Cleanout	2919
Segmented Gate System	2158

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
IonSens Conveyor Monitor	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-08-DD	Segregation Technology to Separate TRU and Non-TRU and Low Level and Free Release Waste
AL-00-01-11-DD	Increased Efficiency Waste Characterization Assay Methods
AL-08-01-17-MW	Certifiability of Newly Generated TRU Waste
AL-09-01-13-DD	On-Site Quantitation of Plutonium and Americium in Soil and Concrete Rubble from D&D Projects
CH-DD08-99	Remote Decontamination of In-ground Concrete Structures

## **DDFA Need Technical Responses**

ID-7.2.18	General Use Remote Tools for Handling Small Items (e.g., pliers) or for Hooking to Rigging
OH-WV-909	Remote Handled Waste Processing
SR00-4011	Waste Characterization

## DDFA Need Technical Responses

**Need ID Number** RL-DD066

**Need Title** Material Removal and Segregation for the 105-F Spent Fuel Basin

**Narrative Response to Need** Hanford seeks improved methods to remove and segregate materials (equipment, sludge, and debris) from the 105-F (and 105-H) basin. The improved system must segregate the materials into LLW for placement in containers and clean material. The depth of the basin is 22 feet. This need is related to RL-DD065 for removal and segregation of basin soil backfill.

**Focus Area** DDFA

**Federal Focus Area POC** Duda, John (304-285-4217)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
Houdini-II Remotely Operated Vehicle System	2085
Houdini: Reconfigurable In Tank Mobile Robot	98
Modified Light Duty Utility Arm (MLDUA)	40
Remote Control Concrete Demolition System	2100
Robotic Platform for B-Cell Cleanout	2919

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
ARTISAN (heavy duty hydraulic manipulators)	D&D Tech. Notebook
BD250 Dexterous Arm	D&D Tech. Notebook - ANS Robotics/Remote Systems
Minescout	D&D Tech. Notebook
MiniTrac & MicroTrac; Remote Operated Crawlers	D&D Tech. Notebook
MURV-100 Teleoperated Robot System	D&D Tech. Notebook
NEATER (Nuclear Engineered Advanced Robots)	D&D Tech. Notebook

## DDFA Need Technical Responses

Pioneer Robot

D&D Tech. Notebook -  
ANS Robotics/Remote  
Systems

Portable Articulated Arm Deployment System (PAADS)

D&D Tech. Notebook -  
ANS Robotics/Remote  
Systems

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-08-DD	Segregation Technology to Separate TRU and Non-TRU and Low Level and Free Release Waste
AL-00-01-11-DD	Increased Efficiency Waste Characterization Assay Methods
AL-08-01-17-MW	Certiifiability of Newly Generated TRU Waste
AL-09-01-13-DD	On-Site Quantitation of Plutonium and Americium in Soil and Concrete Rubble from D&D Projects
CH-DD08-99	Remote Decontamination of In-ground Concrete Structures
ID-7.2.18	General Use Remote Tools for Handling Small Items (e.g., pliers) or for Hooking to Rigging
OH-WV-909	Remote Handled Waste Processing
SR00-4011	Waste Characterization

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD07
<b>Need Title</b>	Fixatives for Building 324 and 327
<b>Narrative Response to Need</b>	Hanford seeks durable (lasts 20-25 years) fixatives to fix and secure dispersible alpha, beta, and gamma within the 324/327 Buildings.. The fixative must be easily removable to allow for eventual decontamination. This may include a two-phase fixative and stripper technique. The application is needed for a variety of surfaces such as those found in gloveboxes, hot cells, and ducts.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	During the Interim Safe Storage of the 105-C Reactor at Hanford, surface stabilization techniques (fixatives) were demonstrated. Subsequent to the Richland demonstrations, both Rocky Flats and Savannah River have utilized the MasterLee Instacote™. The 321-M LSDDP at Savannah River is investigating a series of improved fixatives (ALARA 1146 Cavity Decon) which may apply to this need, as well as RL-DD07, RL-DD032 and RL-DD045. Rocky Flats has tested Sugar Fogging for stabilization of plutonium oxides, which may be applicable to Hanford's need. FIU-HCET has also completed an assessment of strippable coatings for D&D applications.

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### OST TECHNOLOGIES

Technology Title	Technology ID
ALARA 1146 Strippable Coating	2314
Reactor Surface Contamination Stabilization (Reactor Stabilizer)	1839

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Passive Aerosol Generator (PAG)	FIU LSDDP TIS
Polyurea Spray Elastomers	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-04-DD	Fixation of Airborne and Removable Contamination

## **DDFA Need Technical Responses**

AL-07-01-13-DD	Decontamination of Difficult Access Interior Contamination
OH-M903	Method for Controlling Off-Gassing and Removable Contamination from Tritium Piping
RF-DD03	Improved Interior Airborne Particulates Control
SR00-4012	Stabilization of Contaminated Equipment/Components/Surfaces

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD08
<b>Need Title</b>	Remote Cutting Technologies for Building 324 and 327
<b>Narrative Response to Need</b>	Hanford seeks low-cost, remote cutting techniques to size reduce contaminated equipment such as tanks, racks, pipes, etc within the 324/327 Building (B Cell). The technology should be deployable from overhead cranes.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	The RL ASTD "Robotic Platform for B-Cell Cleanout" should provide partial or complete solution to this need. In addition, ASTD projects supported by DDFA at Rocky Flats and Nevada may result in improved deployable methods for remote size reduction/cutting. Nevada is deploying a transportable, remote-operated laser cutting system designed and fabricated by Babcock and Wilcox Hanford Company (BWHC) and Los Alamos National Laboratory. Rocky Flats will install and operate a remote/robotic size reduction technology for the accelerated D&D of gloveboxes and tanks.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Diamond Wire Cutting Technology Assessment of Tokamak Fusion Rest Reactor Vacuum Vessel Surrogate	2389
Hand Held Shear	2304
High Speed Clamshell Pipe Cutter	1807
Laser Cutting and Size Reduction	1477
Mega-Tech Hydraulic Shears	2953
Oxy-Gasoline Torch	1847
Pipe Cutting and Crimping System	2955
Remote/Robotic Size Reduction System	2916
Robotic Platform for B-Cell Cleanout	2919
Rocky Flats D&D Initiative - Central Size Reduction Facility	2918
Self Contained Pipe Cutting Shear	1948
Size Reduction Machine	2395

## DDFA Need Technical Responses

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Arc Saw	FIU LSDDP TIS
Champion Shears	LSDDP (SRS)
Dry Size Reduction System (DSRS)	FIU LSDDP TIS
Hydraulic Cutters/Shears	D&D Tech. Notebook
Hydraulic Shears	FIU LSDDP TIS
Integrated Characterization, Decontamination & Decommissioning Demonstration (ICD3)	FIU LSDDP TIS
LUKAS Rescue Tools - Hydraulic Cutting Shears	D&D Tech. Notebook
Pipe Crimper	FIU LSDDP TIS
Wachs Wheel Cutter	FIU LSDDP TIS

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-05-DD	Alternative Cutting Techniques for Piping
AL-00-01-12-DD	Remote-Handled Size Reduction Technology
CH-DD01-00	Reduced Emissions Metal Cutting
CH-DD06-99	Size Reduction of Massive Metal Structures
ID-7.2.12	Cutting Equipment for Large Items in Above Ground or Underground Structures & Underwater
ID-7.2.29	Remote Demolition of Machinery
ID-7.2.30	Remote Demolition of Metal Structures
ID-7.2.31	Remote Demolition of Piping
OH-F010	Safe and Efficient Process Piping and Conduit Dismantlement
OH-F027	Improved Equipment Dismantlement
OH-WV-910	Size Reduction of Components
ORDD-07	Remote Dismantlement Methods



## **DDFA Need Technical Responses**

ORDD-09	Improved Non-Thermal Cutting of Process Equipment
RF-DD11	Improved Size Reduction of Contaminated Equipment and Demolition Waste
SR00-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment
SR00-4001	Dismantlement of Large and/or Complex Equipment and Structures

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-DD09
<b>Need Title</b>	Tank Remediation for Building 324
<b>Narrative Response to Need</b>	Remote methods are needed to remove tank heels remaining after the tanks are flushed and rinsed. The residual material includes liquids, sludge, solids, and dispersible material ranging from LLW to HLW and may include TRU.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	Beginning in FY00, AEA will be investigating a potential solution to this need in conjunction with deactivation of the 324 vaults.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Confined Sluicing End Effector	812
Laser Cutting and Size Reduction	1477
Oxy-Gasoline Torch	1847

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
Scarab III Remote Vehicle	D&D Tech. Notebook - ANS Robotics/Remote Systems

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### SIMILAR NEEDS

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None identified.

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-MW02
<b>Need Title</b>	Remotely Controlled Size and Volume Reduction Techniques for RH MLLW and RH transuranic waste (TRUW)
<b>Narrative Response to Need</b>	Hanford seeks remote size and volume reduction capabilities for RH MLLW and TRUW to optimal load WIPP shipping containers within the future M-91 Facility. Existing technologies that require remote configuration capabilities include cutting, shredding, compaction and metal meting.
<b>Focus Area</b>	MWFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	DDFA will coordinate with the Mixed Waste Focus Area and the Robotics Crosscut Program to address innovative solutions for this need. This need is similar to needs proposed by West Valley for their Remote Handled Waste Project.

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### OST TECHNOLOGIES

Technology Title	Technology ID
Decontamination and Volume Reduction System (DVRS)	2242
Dual Arm Work Platform Teleoperated Robotics System	1787
Laser Cutting and Size Reduction	1477
Remote/Robotic Size Reduction System	2916
Robotic Platform for B-Cell Cleanout	2919
Rocky Flats D&D Initiative - Central Size Reduction Facility	2918
Size Reduction Machine	2395

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
B-1000 Supercompactor	D&D Tech. Notebook
Champion Shears	LSDDP (SRS)
Dry Size Reduction System (DSRS)	FIU LSDDP TIS
Hydraulic Cutters/Shears	D&D Tech. Notebook

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-01-DD	Size Reduction Technology for TRU Mixed Waste
AL-00-01-12-DD	Remote-Handled Size Reduction Technology
AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals
ID-7.2.29	Remote Demolition of Machinery
ID-7.2.30	Remote Demolition of Metal Structures
ID-7.2.31	Remote Demolition of Piping
NV07-0001-03	Oversize TRU Waste Size Reduction
OH-WV-909	Remote Handled Waste Processing
OH-WV-910	Size Reduction of Components
ORDD-07	Remote Dismantlement Methods
SR00-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment
SR00-4001	Dismantlement of Large and/or Complex Equipment and Structures

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-MW04
<b>Need Title</b>	Remote Decontamination of RH TRUW Debris to Support Reclassification into Non-TRUW Category
<b>Narrative Response to Need</b>	Remote decontamination are needed to provide volume reduction and reduce the amount of material shipped to WIPP as RH TRUW. The objective is to remotely decontaminate RH TRUW to CH TRUW or non-TRU material. The remote decontamination technology is needed for the M-91 Facility.
<b>Focus Area</b>	MWFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	DDFA will coordinate with the Tanks and Mixed Waste Focus Area and the Robotics Crosscut Program to address innovative solutions for this need. This need is similar to needs proposed by West Valley for their Remote Handled Waste Project.

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### OST TECHNOLOGIES

Technology Title	Technology ID
Decontamination and Volume Reduction System (DVRS)	2242
Robotic Platform for B-Cell Cleanout	2919
Rocky Flats D&D Initiative - Central Size Reduction Facility	2918

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### NON-OST TECHNOLOGIES

No Non-OST technologies have been identified and/or accepted

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals
OH-WV-908	Decontamination of High-Level Waste Contaminated Equipment
ORDD-02	Improved Decontamination of Equipment, Machinery, Fabricated Metals & Other Materials
RF-DD10	Improve Decontamination of Non-Porous Building Property and Structures
SR00-2031	Develop Remote Technology to Improve DWPF Operations
SR00-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment

## DDFA Need Technical Responses

**Need ID Number** RL-SNF01

**Need Title** Contaminant Mapping of K-Basin

**Narrative Response to Need** Remote, underwater methods are needed to map and characterize alpha, beta, and gamma contamination on both vertical and horizontal surfaces in order to properly plan deactivation (spent fuel removal) of the K-basin.

**Focus Area** SNF

**Federal Focus Area POC** Duda, John (304-285-4217)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
Remote Underwater Characterization System (RUCS)	2151

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Rocky Nozzle Scanner	D&D Tech. Notebook - ANS Robotics/Remote Systems
Seamor	D&D Tech. Notebook
Underwater Remotely Operated Detectors	FIU LSDDP TIS
URSULA Reactor Vessel NDE Robot	D&D Tech. Notebook - ANS Robotics/Remote Systems

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### SIMILAR NEEDS

Site Need ID	Need Title
ID-7.2.20	Quantitative Underwater Radionuclide Characterization of Structures, Equipment, and Contaminated Pool Walls

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-SNF02
<b>Need Title</b>	Decontamination of K-Basin Pool
<b>Narrative Response to Need</b>	A method to effectively decontaminate contaminants (primarily cesium and strontium) that have migrated into the surface of the concrete of the KE Basin fuel storage pool. The system must be a remote underwater system and must provide mobile supplemental shielding. If underwater stripping is not employed than some form of airborne contaminant containment is necessary. The technology must be capable of decontaminating both vertical and horizontal surfaces ranging in width from 1 inch to 125 feet. The ability to remove fixatives is also desired. The ability to collect and characterize removed contaminants is also required.
<b>Focus Area</b>	SNF
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	Similar needs exist to decontaminate floors and walls for below-grade structures, but none require underwater applications. DDFA will investigate commercially available systems for direct, or through modification, use to underwater decontamination applications.

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted

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### NON-OST TECHNOLOGIES

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No Non-OST technologies have been identified and/or accepted

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### SIMILAR NEEDS

<b>Site Need ID</b>	<b>Need Title</b>
CH-DD08-99	Remote Decontamination of In-ground Concrete Structures

## DDFA Need Technical Responses

**Need ID Number** RL-SNF03

**Need Title** Fixatives for K-Basin

**Narrative Response to Need** Hanford seeks durable long-life (20 to 25 years) fixatives to immobilize dispersible alpha, beta and gamma contamination on vertical and horizontal surfaces of the KE basin. The system must be applied remotely, either in air or underwater. The fixatives must be easily removed to allow for future decontamination.

**Focus Area** SNF

**Federal Focus Area POC** Duda, John (304-285-4217)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
ALARA 1146 Strippable Coating	2314
Reactor Surface Contamination Stabilization (Reactor Stabilizer)	1839

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Passive Aerosol Generator (PAG)	FIU LSDDP TIS
Polyurea Spray Elastomers	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-04-DD	Fixation of Airborne and Removable Contamination
RF-DD03	Improved Interior Airborne Particulates Control
SR00-4012	Stabilization of Contaminated Equipment/Components/Surfaces



## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-SNF05
<b>Need Title</b>	Underwater Fuel Rack Cutting System
<b>Narrative Response to Need</b>	Hanford desires a remote, underwater deployed system to perform in-place cutting of K-basin fuel racks to facilitate removal prior to final basin D&D.
<b>Focus Area</b>	SNF
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	The hydraulic shear-type cutting systems have been manually utilized underwater however a deployment platform with visual guidance will be required for remote application. Additional underwater cutting technologies include arc torch, arc saw, and thermite lances but the production rates may be lower and secondary waste is produced. This need was not reviewed with Hanford, but the OST and non-OST technologies may provide a partial or complete solution to the need.

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### OST TECHNOLOGIES

Technology Title	Technology ID
Light Duty Utility Arm	85
Mega-Tech Hydraulic Shears	2953
Modified Light Duty Utility Arm (MLDUA)	40

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Hydraulic Cutters/Shears	D&D Tech. Notebook
Hydraulic Shears	FIU LSDDP TIS
LUKAS Rescue Tools - Hydraulic Cutting Shears	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
ID-7.2.21	Removal of Two Reactors as Single Unit

## DDFA Need Technical Responses

<b>Need ID Number</b>	RL-SNF06
<b>Need Title</b>	Sludge Treatment Process
<b>Narrative Response to Need</b>	Hanford seeks a method to treat sludge removed from the K-basin prior to D&D activities. The treatment method must be remotely operated for use in high-radiation areas. It must process sludge such that the fissile material will not be concentrated and the sludge will not cause other safety problems during storage. The sludge does not meet waste acceptance criteria and is composed of sand, dirt, fuel corrosion products, paint chips, and corrosion products from other hardware in the basin such as racks and canisters. PCBs are present.
<b>Focus Area</b>	SNF
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	Though the EM Science Program project #64979 "Basic Engineering Research for D&D of R. Reactor Storage Pond Sludge: Electrokinetics, Carbon Dioxide Extraction, and Supercritical Water Oxidation" is directed to the reactor spent fuel storage ponds, it may have application to this need.

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### OST TECHNOLOGIES

Technology Title	Technology ID
Vortec Combustion Melter System	68

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Solidification/Stabilization Agents	D&D Tech. Notebook

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### SIMILAR NEEDS

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None identified.

## DDFA Need Technical Responses

**Need ID Number** SR00-1014

**Need Title** Cleaning of Alpha Contaminated Launderables

**Narrative Response to Need** Alternate cleaning methods that will clean alpha contaminated launderables onsite, versus current method of transporting offsite for cleaning. This will also address problem of contaminated launderables that exceed current acceptance criteria at commercial laundries with alpha limits. .

**Focus Area** DDFA

**Federal Focus Area POC** Duda, John (304-285-4217)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
NuFab Anti Contamination Suit	1855
Sealed-Seam Sack Suit	1954

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### NON-OST TECHNOLOGIES

No Non-OST technologies have been identified and/or accepted

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### SIMILAR NEEDS

None identified.

## DDFA Need Technical Responses

**Need ID Number** SR00-2029

**Need Title** Alternate DWPF Canister Decon Technology

**Narrative Response to Need** Need is for a more effective technology that will remove contamination as well as the oxide layer from the outside surface of the DWPF stainless steel canister. The contamination level of the exterior surface must be less than 2200 dpm/10 cm<sup>2</sup> beta gamma and 220 dpm/100cm<sup>2</sup> alpha. Technology will minimize actual decontamination time, as well as full cycle time between canister decontaminations. Technology should simplify decontamination system controls, regarding operations and maintenance functions, and minimize gas and liquid waste.

**Focus Area** TFA

**Federal Focus Area POC** Duda, John (304-285-4217)

### Additional Comments

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### OST TECHNOLOGIES

Technology Title	Technology ID
Advanced Recyclable Media System	1971
ALARA 1146 Strippable Coating	2314
Decontamination Using Liquid Nitrogen Carrier with Solid Carbon Dioxide Pellet	1456
Laser Decontamination and Recycle of Metals	955
Laser Surface Cleaning	32
Paint Scaler	2952
Rotary Peening with Captive Shot	1812
ROTO PEEN Scaler and VAC PAC System	1943
Soda Blasting Decontamination Process	369
Soft Media Blast Cleaning	1899
Steam Vacuum Cleaning	1780

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
CO2 Pellet Cleaning	D&D Tech. Notebook
Laser	FIU LSDDP TIS

## DDFA Need Technical Responses

Laser ZAWCAD	FIU LSDDP TIS
Polyurea Spray Elastomers	D&D Tech. Notebook
RADCON LASER (ERASER)	FIU LSDDP TIS
Sivablast System	D&D Tech. Notebook - ANS Robotics/Remote Systems

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### SIMILAR NEEDS

Site Need ID	Need Title
OH-WV-902	Decontamination of HLW Canisters
OH-WV-903	Vitrification Expended Material Processing
RF-DD10	Improve Decontamination of Non-Porous Building Property and Structures
RL-DD061	Remote/Robotic Systems for 233-S
RL-DD063	Decontamination of Transuranic Debris for 233-S

## DDFA Need Technical Responses

<b>Need ID Number</b>	SR00-2031
<b>Need Title</b>	Develop Remote Technology to Improve DWPF Operations
<b>Narrative Response to Need</b>	<p>Need is for a remote/robotic technology that will be able to perform remote maintenance, video inspection and cleanup activities within the canyon in radiation fields up to 104 R/hr. The need can be broken down into the following three areas.</p> <ol style="list-style-type: none"> <li>1. Equipment that can be used for cell recovery and cleanup. Must be remotely controlled, self propelled, and capable of remote video observation. It should have the capability to grasp objects up to 4" across and weighing up to 100 lb.</li> <li>2. Improved telerobotic replacements, similar to their predecessors, for the REDC electromechanical manipulators. They must have video capability and lifting capacity equivalent to their predecessors. They must withstand decontamination media.</li> <li>3. An improved method to perform inspection, repair, D&amp;D and equipment recovery using the MPC can be addressed via the use of a dual arm telerobotic manipulator. This remotely controlled device with remote video observation capabilities would be capable of hanging from a crane hook to perform work with both arms or alternatively use one arm for support/movement and the other to perform work.</li> </ol>
<b>Focus Area</b>	TFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)

### Additional Comments

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#### OST TECHNOLOGIES

Technology Title	Technology ID
Dual-Point Impedance Control for Telerobotics	2173
Intelligent Mobile Sensor System for Autonomous Monitoring and inspection	264
Robotic Platform for B-Cell Cleanout	2919

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#### NON-OST TECHNOLOGIES

Technology Title	Data Source
ARTISAN (heavy duty hydraulic manipulators)	D&D Tech. Notebook
Autonomous Robotic Inspection Experimental System (ARIES)	D&D Tech. Notebook - ANS Robotics/Remote Systems

## DDFA Need Technical Responses

BD250 Dexterous Arm	D&D Tech. Notebook - ANS Robotics/Remote Systems
Circumspector	D&D Tech. Notebook
Environmentally Robust LADAR for 3D Imaging	D&D Tech. Notebook - ANS Robotics/Remote Systems
Minescout	D&D Tech. Notebook
MiniTrac & MicroTrac; Remote Operated Crawlers	D&D Tech. Notebook
Mobile Platform, Heavy-Duty, Multiple Manipulator Robot	FIU LSDDP TIS
MURV-100 Teleoperated Robot System	D&D Tech. Notebook
NEATER (Nuclear Engineered Advanced Robots)	D&D Tech. Notebook
Photogrammetry	FIU LSDDP TIS
Pioneer Robot	D&D Tech. Notebook - ANS Robotics/Remote Systems
Portable Articulated Arm Deployment System (PAADS)	D&D Tech. Notebook - ANS Robotics/Remote Systems
Remote Handling Systems & Manipulators	D&D Tech. Notebook
Scissors; Camera Deployment Mechanism	D&D Tech. Notebook
Telbot Manipulator System	D&D Tech. Notebook - ANS Robotics/Remote Systems
Tele-Operated Crawler System	D&D Tech. Notebook - ANS Robotics/Remote Systems
TV3 Stereoscopic TV	D&D Tech. Notebook

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
ID-7.2.08	Robotics for D&D
ID-7.2.18	General Use Remote Tools for Handling Small Items (e.g., pliers) or for Hooking to Rigging
ID-7.2.19	Remote/Robotic Technologies for Access and Deployment of Characterization & Sampling Tools
OH-WV-903	Vitrification Expended Material Processing
RL-DD010	Radiation Hardened Robotics for Building 324
RL-DD011	Structural Integrity Inspection - 324/327 Buildings Hot Cell Liners
RL-DD034	Remote/Robotic Technologies for CDI
RL-DD035	Visual/Spatial Imaging for CDI
RL-DD047	Remote Viewing for Hot Cells in Buildings 324 and 327
RL-DD061	Remote/Robotic Systems for 233-S
RL-DD065	Backfill Removal and Segregation for the 105-F Spent Fuel Basin
RL-DD066	Material Removal and Segregation for the 105-F Spent Fuel Basin



## DDFA Need Technical Responses

<b>Need ID Number</b>	SR00-2040
<b>Need Title</b>	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment
<b>Narrative Response to Need</b>	Need is for a remote/robotic technology that has the capability to decommission, size reduce, decontaminate, classify and dispose of failed, highly contaminated processing equipment. Size of equipment can be as large as 20-ft wide, 40-ft deep, and 20-ft tall. Facility equipment must be remotely replaceable and must be capable of operation in radiation fields of up to 104 R/hr.
<b>Focus Area</b>	TFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	Materials of importance include various metals up to 6-in thick, plastic and elastomeric materials, electrical motors/equipment, refractory and ceramic materials up to 14-in thick, glass blocks up to 2-in thick, and other miscellaneous materials.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Diamond Wire Cutting Technology Assessment of Tokamak Fusion Rest Reactor Vacuum Vessel Surrogate	2389
Mega-Tech Hydraulic Shears	2953
Pipe Cutting and Crimping System	2955
Remote/Robotic Size Reduction System	2916
Robotic Platform for B-Cell Cleanout	2919
Rocky Flats D&D Initiative - Central Size Reduction Facility	2918
Size Reduction Machine	2395

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
Arc Saw	FIU LSDDP TIS
ARTISAN (heavy duty hydraulic manipulators)	D&D Tech. Notebook
BD250 Dexterous Arm	D&D Tech. Notebook - ANS Robotics/Remote Systems

## DDFA Need Technical Responses

Dry Size Reduction System (DSRS)	FIU LSDDP TIS
Hydraulic Cutters/Shears	D&D Tech. Notebook
Hydraulic Shears	FIU LSDDP TIS
Integrated Characterization, Decontamination & Decommissioning Demonstration (ICD3)	FIU LSDDP TIS
Laser	FIU LSDDP TIS
Laser ZAWCAD	FIU LSDDP TIS
LUKAS Rescue Tools - Hydraulic Cutting Shears	D&D Tech. Notebook
NEATER (Nuclear Engineered Advanced Robots)	D&D Tech. Notebook
Pipe Crimper	FIU LSDDP TIS
Portable Articulated Arm Deployment System (PAADS)	D&D Tech. Notebook - ANS Robotics/Remote Systems
Remote Handling Systems & Manipulators	D&D Tech. Notebook
Telbot Manipulator System	D&D Tech. Notebook - ANS Robotics/Remote Systems
Wachs Wheel Cutter	FIU LSDDP TIS

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-01-DD	Size Reduction Technology for TRU Mixed Waste
AL-00-01-05-DD	Alternative Cutting Techniques for Piping
AL-00-01-07-DD	Ex Situ Glove Box Size Reduction System
AL-00-01-12-DD	Remote-Handled Size Reduction Technology
AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals
CH-DD01-00	Reduced Emissions Metal Cutting
CH-DD06-99	Size Reduction of Massive Metal Structures

## **DDFA Need Technical Responses**

ID-7.2.12	Cutting Equipment for Large Items in Above Ground or Underground Structures & Underwater
ID-7.2.18	General Use Remote Tools for Handling Small Items (e.g., pliers) or for Hooking to Rigging
ID-7.2.29	Remote Demolition of Machinery
ID-7.2.30	Remote Demolition of Metal Structures
ID-7.2.31	Remote Demolition of Piping
NV07-0001-03	Oversize TRU Waste Size Reduction
OH-F010	Safe and Efficient Process Piping and Conduit Dismantlement
OH-F027	Improved Equipment Dismantlement
OH-WV-909	Remote Handled Waste Processing
OH-WV-910	Size Reduction of Components
ORDD-07	Remote Dismantlement Methods
ORDD-09	Improved Non-Thermal Cutting of Process Equipment
RF-DD11	Improved Size Reduction of Contaminated Equipment and Demolition Waste
RL-DD02	Glove Box Size Reduction System for PFP
RL-DD030	Cutting Plutonium Contaminated Pipe for 233-S
RL-DD061	Remote/Robotic Systems for 233-S
RL-DD065	Backfill Removal and Segregation for the 105-F Spent Fuel Basin
RL-DD066	Material Removal and Segregation for the 105-F Spent Fuel Basin
RL-DD08	Remote Cutting Technologies for Building 324 and 327
RL-MW02	Remotely Controlled Size and Volume Reduction Techniques for RH MLLW and RH transuranic waste (TRUW)

## DDFA Need Technical Responses

<b>Need ID Number</b>	SR00-4001
<b>Need Title</b>	Dismantlement of Large and/or Complex Equipment and Structures
<b>Narrative Response to Need</b>	A remotely operated system that can dismantle (segment and/or rubbilize) large steel components (i.e., structural steel) and reinforced concrete and rebar, handle pieces up to a 1000 lbs., and work at heights up to 40 feet in a radioactive and hazardous materials environment. Secondary waste will also be collected, volume reduced and containerized by system.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	The International Agreement between the DDFA and AEA Technology is designed to provide accelerated access to proven internationally developed D&D technologies. The AEA Diamond Wire Cutting System has been identified as a partial solution to this need.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Concrete Dust Suppression System	2154
Diamond Wire Cutting Technology Assessment of Tokamak Fusion Rest Reactor Vacuum Vessel Surrogate	2389
Dual Arm Work Platform Teleoperated Robotics System	1787
High Speed Clamshell Pipe Cutter	1807
Laser Cutting and Size Reduction	1477
Liquid-Nitrogen Cooled Diamond-Wire Concrete Cutting	2107
Mobile Robot Worksystem (ROSIE)	1799
Oxy-Gasoline Torch	1847
Remote Control Concrete Demolition System	2100
Remote/Robotic Size Reduction System	2916
Size Reduction Machine	2395
Swing-Reduced Crane Control	1815
Track Mounted Shear/Crusher	2303

## DDFA Need Technical Responses

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Arc Saw	FIU LSDDP TIS
Diamond Wire Saw	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
CH-DD06-99	Size Reduction of Massive Metal Structures
ID-7.2.12	Cutting Equipment for Large Items in Above Ground or Underground Structures & Underwater
ID-7.2.13	Penetrations in Concrete Floor and Demolition of Concrete Roof
ID-7.2.28	Remote Demolition of Concrete Structures
ID-7.2.30	Remote Demolition of Metal Structures
OH-F047	Pulverizing Concrete for Site Aggregate Needs
ORDD-07	Remote Dismantlement Methods
RF-DD11	Improved Size Reduction of Contaminated Equipment and Demolition Waste
RF-DD20	Characterization and Removal of Large Contaminated Equipment Entombed in Concrete
RL-DD08	Remote Cutting Technologies for Building 324 and 327

## DDFA Need Technical Responses

<b>Need ID Number</b>	SR00-4002
<b>Need Title</b>	Characterization of Contaminated Surfaces
<b>Narrative Response to Need</b>	A real-time, in-situ, field deployable characterization tool that can eliminate project schedule delays resulting from lag time between sampling and receipt of lab analysis results. Should be able to provide radiological and hazardous material analysis on concrete, metal surfaces, and process equipment. Should be able to measure contamination, on a contaminant-by-contaminant basis, down to free-release levels.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	Main focus is to not to send contaminated material (ie., paint chips, concrete bores, packaged scabbled concrete, and metal coupons to laboratory for analysis. Contaminants of interest include tritium to heavy metals (U, Pu, etc.), activation products (Co-60, Ni-63, etc.) and various assortment of hazardous materials (PCBs, asbestos, Pb, Hg, etc.)

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
3-D Visual and Gamma Ray Imaging System (Gamma Modeler)	2402
Beryllium Swipe Monitor	2915
Electret Ion Chambers	2315
Field Transportable Beta Spectrometer	1853
Gamma Cam (TM) Radiation Imaging System	1840
Gamma Ray Imaging System	1793
Ground Based Laser Induced Fluorescence Imaging	1999
In Situ Object Counting System	2098
Indoor Radiation Mapping Using Laser Assisted Ranging and Data System (LARADS)	1946
Long Range Alpha Detection for Component Monitoring	2382
Mobile Automated Characterization System	1798
NITON 800 Series Multi-Element Spectrum Analyzer	2397
Online Measurement of the Progress of Decontamination	2376

## DDFA Need Technical Responses

Paint Scaler	2952
PCB Analyzer	2398
Portable X-Ray Fluorescence Spectrometer	1790
Portable X-Ray, K-Edge Heavy Metal Detector	134
Rapid Surface Sampling and Archive Record (RSSAR) System	96
Real-Time Surface Tritium Monitor	2933
Solid State Pin Diode Direct Reading Surface Tritium Detector	2956
Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)	1942

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Aladin Gamma Camera	D&D Tech. Notebook
Amandin Surface Counter	D&D Tech. Notebook
Beta Contamination Detector with High Gamma Filtration/Rejection	FIU LSDDP TIS
FissTrack Plutonium Inventory Measurement System	D&D Tech. Notebook
Integrated Characterization, Decontamination & Decommissioning Demonstration (ICD3)	FIU LSDDP TIS
NOMAD Plus and MicroNOMAD Portable Spectroscopy Systems	FIU LSDDP TIS
Plutonium Can Contents Monitor	D&D Tech. Notebook
Portable Survey Meters	D&D Tech. Notebook
Radiation Detectors	D&D Tech. Notebook
TRU Crate/Box Monitor	D&D Tech. Notebook
TRU Drum Monitor	D&D Tech. Notebook
TRU Piece Monitor	D&D Tech. Notebook
TRU-D 400 TRU Package Monitor	D&D Tech. Notebook
Uranium Drum Enrichment Monitor	D&D Tech. Notebook

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-02-DD	Characterization Technologies for Verifying Presence or Absence of Contamination in Structures Scheduled for D&D
AL-00-01-08-DD	Segregation Technology to Separate TRU and Non-TRU and Low Level and Free Release Waste
AL-07-01-14-MW	Characterization and Segregation of TRU Waste Now Stored in Fiberglass Reinforced Plywood Boxes LANL
AL-09-01-11-MW	Characterization of Equipment Potentially Contaminated with Alpha Emitting Transuranic (TRU) Radionuclides
CH-DD11-99	Remote Characterization of In-ground Concrete Structures
ID-7.2.06	Remote Characterization for Building Release, Large Area Surface Soil Characterization, and Characterization of Sumps, Debris, Underwater Areas, and Buried Pipes and Utilities
ID-7.2.15	Field Screening of Paint/Painted Surfaces to Identify Contamination such as; PCB, Lead, and other RCRA Metals in the Paint
ID-7.2.17	Field Screening of Samples and Equipment Surfaces to Identify PCB Contamination
NV10-0001-10	Improved Detection and Characterization of Radioactive Contamination on Large Concrete and Metal Surfaces
OH-M901	Improved Facility Survey Techniques
OH-WV-913	Far-Field Radioactivity Measurement
ORDD-01	Improved Characterization of Equipment, Machinery, Fabricated Metals & Other Materials
ORDD-12	Improved Characterization of Buildings and Facilities
RF-DD01	Improved Pre-D&D Characterization for Distinguishing Between TRU and Low-Level Contamination
RF-DD02	High Speed Integrated Characterization System for (1) Radioactive, (2) Hazardous and (3) Toxic Contamination
RF-DD04	Improved Measurement Techniques for Free Release of Property and



## **DDFA Need Technical Responses**

### Salvageable Equipment Contaminated with Radionuclides

RF-DD15	Real-Time Beryllium Surface Characterization
RL-DD033	Field Screening for Hazardous Materials for 105-F and 105-DR Reactors
RL-DD036	General Radiation Surveys of Concrete and Equipment in the Materials Processing Facilities for CDI
RL-DD039	Solids (Sediment/Sludge/Dust) Characterization for CDI
RL-DD05	Characterization of Building 324 and 327
RL-DD061	Remote/Robotic Systems for 233-S

## DDFA Need Technical Responses

<b>Need ID Number</b>	SR00-4003
<b>Need Title</b>	Material Recycle (Process Equipment, Metal, Steel, and Concrete)
<b>Narrative Response to Need</b>	A need for a field-deployable decontamination and fabrication process that could clean complex equipment, metal, steel, and concrete to unrestricted release levels, while minimizing secondary waste. This should allow for material recycle to occur.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	Development or identification of a technology that can deactivate activated products would be an added plus.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
ALARA 1146 Strippable Coating	2314
Biodegradation of Concrete	1421
Centrifugal Shot Blast System	1851
Concrete Grinder	2102
Concrete Shaver	1950
Ex-Situ Large Bore Pipe Decontamination and Characterization System	2375
High Productivity Vacuum Blasting	2224
INEEL ASTD: Release of Concrete for Recycle from D&D Projects	2373
Laser Decontamination and Recycle of Metals	955
Nukem Copper Recycle System	2958
Removal of Contaminants from Equipment and Debris, and Waste Minimization Using TECHXTRACT	1450
Reuse of Concrete from Contaminated Structures	210
ROTO PEEN Scaler and VAC PAC System	1943
SEG Recycle and Reuse of Radioactively Contaminated Scrap Metal	1595
Soft Media Blast Cleaning	1899
Stainless Steel Beneficial Reuse	80

## DDFA Need Technical Responses

Steam Vacuum Cleaning

1780

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
CO2 Pellet Cleaning	D&D Tech. Notebook
CORD-UV	D&D Tech. Notebook
Decontamination for Decommissioning (DFD) Process	D&D Tech. Notebook
Laser	FIU LSDDP TIS
Laser ZAWCAD	FIU LSDDP TIS
Mobile Decon Systems (super-heated water, abrasive blasting, or mechanical rotary systems)	D&D Tech. Notebook
Mobile Decontamination Facility	D&D Tech. Notebook
RADCON LASER (ERASER)	FIU LSDDP TIS
Sivablast System	D&D Tech. Notebook - ANS Robotics/Remote Systems

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-07-01-12-DD	Decontaminate and Decommission Radioactively Contaminated Facilities
AL-07-01-13-DD	Decontamination of Difficult Access Interior Contamination
AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals
CH-MW03-99	Lead Removal, Segregation and Disposal
ID-7.2.14	Technology for Decontamination of Radionuclide Contaminated Lead Shot, Brick, and Sheeting for Free Release
ID-7.2.22	Concrete and Asphalt Recycle
ID-7.2.24	Decontamination of Metal Debris
ID-7.2.25	Decontamination of Metal Pipes
ID-7.2.27	Reuse of Metal Pipes, Lumber, Lead, and Other Metals

## **DDFA Need Technical Responses**

ORDD-02	Improved Decontamination of Equipment, Machinery, Fabricated Metals & Other Materials
RF-DD10	Improve Decontamination of Non-Porous Building Property and Structures
RL-DD021	Metal Decontamination and Recycling for the D&D Program
RL-DD03	Terminal Clean-Out and TRU Waste Decontamination of PFP
RL-DD059	Lead Decontamination for the S&M Program
RL-DD06	Decontamination of Building 324 and 327
RL-DD063	Decontamination of Transuranic Debris for 233-S

## DDFA Need Technical Responses

<b>Need ID Number</b>	SR00-4004
<b>Need Title</b>	Decontamination of Contaminated Concrete
<b>Narrative Response to Need</b>	A concrete decontamination technology that can remove radioactive material to free release levels without destroying the concrete. Secondary waste minimization, decontamination of irregular surfaces, and decontamination of epoxied and painted surfaces is also a need.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	Contaminants to be removed include transuranics, actinide, fission products, and tritium surfaces.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
2-D Linear Motion System (Wall Walker)	1476
Biodegradation of Concrete	1421
Centrifugal Shot Blast System	1851
Concrete Grinder	2102
Concrete Shaver	1950
Concrete Spaller	2152
High Productivity Vacuum Blasting	2224
Integrated Vertical and Overhead Decontamination System	2378
Laser Surface Cleaning	32
Remotely Operated Scabbling	2099
Rotary Peening with Captive Shot	1812
ROTO PEEN Scaler and VAC PAC System	1943
Soft Media Blast Cleaning	1899

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
Betonamist	FIU LSDDP TIS
Cavity Plus Decon System	D&D Tech. Notebook

## DDFA Need Technical Responses

CO2 Pellet Cleaning	D&D Tech. Notebook
En-Vac Robotic Climber	FIU LSDDP TIS
Horizontal Surface Shot Blaster (EBE 350)	D&D Tech. Notebook
KSI Tentacle Manipulator	FIU LSDDP TIS
Laser	FIU LSDDP TIS
Laser ZAWCAD	FIU LSDDP TIS
Milling	FIU LSDDP TIS
Mobile Decon Systems (super-heated water, abrasive blasting, or mechanical rotary systems)	D&D Tech. Notebook
RADCON LASER (ERASER)	FIU LSDDP TIS
Robotic Climber	FIU LSDDP TIS
Sivablast System	D&D Tech. Notebook - ANS Robotics/Remote Systems
Vertical Surface Shot Blaster (EBE 250 VHC)	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-06-DD	Effective Decontamination of Concrete
AL-07-01-12-DD	Decontaminate and Decommission Radioactively Contaminated Facilities
CH-DD07-99	Decontamination of Fixed Surface Contamination of Concrete (thin layer removal)
CH-DD08-99	Remote Decontamination of In-ground Concrete Structures
ID-7.2.03	Decontamination of Concrete Walls, Floors, Ceilings, and Corners
ORDD-03	Improved Decontamination of Facility Concrete and Painted Surfaces
ORDD-06	Improved Remote Decontamination Methods
RF-DD09	Improved Decontamination of Porous Surfaces in Preparation for Building Demolition
RL-DD06	Decontamination of Building 324 and 327
RL-DD061	Remote/Robotic Systems for 233-S

## DDFA Need Technical Responses

<b>Need ID Number</b>	SR00-4005
<b>Need Title</b>	Characterization of Inaccessible Areas
<b>Narrative Response to Need</b>	A non-destructive, non-intrusive technology that can provide real-time characterization and in-situ sampling for inaccessible areas. The inaccessible areas include pipes, drain lines, cavities, or ventilation ducts.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	Characterization equipment will be able to measure transuranics, activation products and tritium. Special emphasis placed on accurate characterization of tritium-contaminated pipes.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Associated Particle Imaging Development	413
Internal Duct Characterization System	42
Non-Intrusive Liquid Level Detection System	2403
Pipe Crawler Internal Piping Characterization System	1810
Pipe Explorer (TM) System	74
Portable X-Ray, K-Edge Heavy Metal Detector	134
Small Pipe Characterization System (SPCS)	43

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
Pipe Walker	FIU LSDDP TIS
Versatrax; Remote Pipe Inspection	D&D Tech. Notebook

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### SIMILAR NEEDS

<b>Site Need ID</b>	<b>Need Title</b>
AL-00-01-02-DD	Characterization Technologies for Verifying Presence or Absence of Contamination in Structures Scheduled for D&D
AL-09-01-11-MW	Characterization of Equipment Potentially Contaminated with Alpha Emitting Transuranic (TRU) Radionuclides

## **DDFA Need Technical Responses**

ID-7.2.06	Remote Characterization for Building Release, Large Area Surface Soil Characterization, and Characterization of Sumps, Debris, Underwater Areas, and Buried Pipes and Utilities
NV09-0001-09	Nonintrusive Surveys in Pipes and Vessels
OH-C901	Robotic Device to Improve Characterization of Underground Pipe Lines
ORDD-01	Improved Characterization of Equipment, Machinery, Fabricated Metals & Other Materials
RF-DD01	Improved Pre-D&D Characterization for Distinguishing Between TRU and Low-Level Contamination
RL-DD039	Solids (Sediment/Sludge/Dust) Characterization for CDI
RL-DD05	Characterization of Building 324 and 327



## DDFA Need Technical Responses

**Need ID Number** SR00-4006

**Need Title** Asbestos Treatment to Allow Reuse

**Narrative Response to Need** Need a technology that can non-destructively decontaminate all asbestos containing materials (i.e., lagging on steam pipes, panels, fireproofing, etc.). At the least, a technology that can trap the asbestos fibers so they don't become airborne during removal jobs..

**Focus Area** DDFA

**Federal Focus Area POC** Duda, John (304-285-4217)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
ALARA 1146 Strippable Coating	2314
In Situ Chemical Treatment of Asbestos	73
Thermal Conversion of Asbestos	224

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Transite "Bolt" Removal and Capture Device	FIU LSDDP TIS
Transite Pulverizer/Transfer System	FIU LSDDP TIS

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### SIMILAR NEEDS

Site Need ID	Need Title
ID-7.2.11	Asbestos Wrapped/Insulated Pipe Removal and Packaging

## DDFA Need Technical Responses

<b>Need ID Number</b>	SR00-4007
<b>Need Title</b>	Characterization of Volumetrically Contaminated Surfaces
<b>Narrative Response to Need</b>	Need a real-time, field deployable, in-situ (if possible) characterization technology that can conclusively determine to free release standards, the type of contamination and the cross sectional profile of the volumetric contamination for tritium, radium, etc.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	Do not want to send samples to lab for analysis.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Online Measurement of the Progress of Decontamination	2376
Portable X-Ray, K-Edge Heavy Metal Detector	134
Remote Concrete Coring	2329

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### NON-OST TECHNOLOGIES

No Non-OST technologies have been identified and/or accepted

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### SIMILAR NEEDS

<b>Site Need ID</b>	<b>Need Title</b>
AL-00-01-02-DD	Characterization Technologies for Verifying Presence or Absence of Contamination in Structures Scheduled for D&D
AL-09-01-14-DD	Quantitation of Tritium in Concrete Rubble from D&D Projects
OH-M901	Improved Facility Survey Techniques
RL-DD033	Field Screening for Hazardous Materials for 105-F and 105-DR Reactors

## DDFA Need Technical Responses

<b>Need ID Number</b>	SR00-4008
<b>Need Title</b>	Dismantlement of Concrete-Encased Piping
<b>Narrative Response to Need</b>	Need is for a technology that will dismantle small bore piping encased in concrete, involving a minimal amount of removal of reinforced concrete. Should minimize generation of secondary waste as well as spread of contamination from the piping.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Diamond Wire Cutting Technology Assessment of Tokamak Fusion Rest Reactor Vacuum Vessel Surrogate	2389
Liquid-Nitrogen Cooled Diamond-Wire Concrete Cutting	2107
Mega-Tech Hydraulic Shears	2953
Oxy-Gasoline Torch	1847
Pipe Cutting and Crimping System	2955
Remote Control Concrete Demolition System	2100
Size Reduction Machine	2395
Track Mounted Shear/Crusher	2303

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
Diamond Wire Saw	D&D Tech. Notebook
Hydraulic Cutters/Shears	D&D Tech. Notebook
Hydraulic Shears	FIU LSDDP TIS
LUKAS Rescue Tools - Hydraulic Cutting Shears	D&D Tech. Notebook
Pipe Crimper	FIU LSDDP TIS
Wachs Wheel Cutter	FIU LSDDP TIS

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
ID-7.2.12	Cutting Equipment for Large Items in Above Ground or Underground Structures & Underwater
ID-7.2.13	Penetrations in Concrete Floor and Demolition of Concrete Roof
ID-7.2.31	Remote Demolition of Piping
OH-F010	Safe and Efficient Process Piping and Conduit Dismantlement
ORDD-07	Remote Dismantlement Methods
RF-DD11	Improved Size Reduction of Contaminated Equipment and Demolition Waste
RF-DD20	Characterization and Removal of Large Contaminated Equipment Entombed in Concrete
RL-DD030	Cutting Plutonium Contaminated Pipe for 233-S
RL-DD08	Remote Cutting Technologies for Building 324 and 327

## DDFA Need Technical Responses

<b>Need ID Number</b>	SR00-4009
<b>Need Title</b>	Improved Exhaust Treatment Systems
<b>Narrative Response to Need</b>	Need is for a reusable, temporary ventilation system that will replace an existing permanent ventilation system. Ventilation system should meet air exchange, differential pressure, and exhaust filtration requirements for facility. System should be reusable, allowing for use at another job, when current job is completed.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	The International Agreement between the DDFA and AEA Technology is designed to provide accelerated access to proven internationally developed D&D technologies. The AEA Vortex Amplifier has been identified as a partial solution to this need.

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### OST TECHNOLOGIES

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No OST technologies have been identified and/or accepted

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
Containment Sheeting	FIU LSDDP TIS
Electron Wind Generator (EWG)	Vendor Literature

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### SIMILAR NEEDS

<b>Site Need ID</b>	<b>Need Title</b>
RL-DD062	Method to Capture Airborne Alpha Contamination for 233-S

## DDFA Need Technical Responses

<b>Need ID Number</b>	SR00-4010
<b>Need Title</b>	Characterization Data Management
<b>Narrative Response to Need</b>	Need a multi-media relational computer database that tracks all forms of characterization data (including photos and videos) and provides ties/links to other decommissioning project documents and applicable regulations. This will allow easier situational analysis which will lead to better project decisions.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	The International Agreement between the DDFA and AEA Technology is designed to provide accelerated access to proven internationally developed D&D technologies. The AEA Liability Management Tool has been identified as a partial solution to this need.

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Remote Surveillance of Facilities Awaiting D&D	2377
System for Tracking Remediation, Exposure, Activities and Materials (STREAM)	1947

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
Waste Mover	FIU LSDDP TIS

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### SIMILAR NEEDS

<b>Site Need ID</b>	<b>Need Title</b>
RL-DD053	Operational Modeling for CDI
RL-DD055	Remote Monitoring System Upgrades for the S&M Program
RL-DD056	Facility Life Model for the S&M Program

## DDFA Need Technical Responses

<b>Need ID Number</b>	SR00-4011
<b>Need Title</b>	Waste Characterization
<b>Narrative Response to Need</b>	Need is for a technology that can perform characterization of radioactive material in different size waste containers (from small to large - up to B-25 in size) down to SRS free-release limits. Technology should be portable and should determine materials within reasonable time (<15 minutes) per container.
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	Contaminants of interest range from heavy metals (U, Pu, etc.) to activation products (Co-60, Ni-63, etc.)

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### OST TECHNOLOGIES

<b>Technology Title</b>	<b>Technology ID</b>
Long Range Alpha Detection for Component Monitoring	2382
Mobile Characterization System for Large Crates	2959
Portable X-Ray, K-Edge Heavy Metal Detector	134
Standard Waste Box Crate Counter	2917
Vehicle and Cargo Inspection System (VACIS)	2912
Waste Inspection Tomography (WIT)	259

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### NON-OST TECHNOLOGIES

<b>Technology Title</b>	<b>Data Source</b>
DrumScan Modular Segmented Gamma Scanner	D&D Tech. Notebook
IonSens Conveyor Monitor	D&D Tech. Notebook
IPAN/GEA (imaging passive-active neutron/gamma energy assay) Crate System	D&D Tech. Notebook
IPAN/GEA (imaging passive-active neutron/gamma energy assay) Drum System	D&D Tech. Notebook
Waste Assay Systems	D&D Tech. Notebook

## DDFA Need Technical Responses

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-08-DD	Segregation Technology to Separate TRU and Non-TRU and Low Level and Free Release Waste
AL-00-01-11-DD	Increased Efficiency Waste Characterization Assay Methods
AL-07-01-14-MW	Characterization and Segregation of TRU Waste Now Stored in Fiberglass Reinforced Plywood Boxes LANL
AL-08-01-17-MW	Certiifiability of Newly Generated TRU Waste
AL-09-01-13-DD	On-Site Quantitation of Plutonium and Americium in Soil and Concrete Rubble from D&D Projects
OH-WV-901	Characterization of Low Level and Transuranic Waste
OH-WV-909	Remote Handled Waste Processing
OK99-06	Mobile Non-Destructive Assay for TRU Waste Boxes
RL-DD035-S	Neutron Detection for Sorting Remote-Handled Radioactive Waste into TRU vs Non-TRU
RL-DD05	Characterization of Building 324 and 327
RL-DD060	Characterization for Waste Handling, Packaging and Processing for 233-S
RL-DD065	Backfill Removal and Segregation for the 105-F Spent Fuel Basin
RL-DD066	Material Removal and Segregation for the 105-F Spent Fuel Basin



## DDFA Need Technical Responses

<b>Need ID Number</b>	SR00-4012
<b>Need Title</b>	Stabilization of Contaminated Equipment/Components/Surfaces
<b>Narrative Response to Need</b>	<p>Need is for a stabilization compound for different types of surfaces.</p> <p>1) compound that can be sprayed as an aerosol, that fogs a given area, floating down to the surface and encapsulating airborne and surface contaminants (minimum of 1 month).</p> <p>2) foaming agent that can be introduced internally into an area or piece of process equipment that fixes contamination, making contamination area inactive (20-25 years).</p> <p>3) coating material that fixes contamination, but is non-hazardous in all its chemical forms (20-25 years).</p>
<b>Focus Area</b>	DDFA
<b>Federal Focus Area POC</b>	Duda, John (304-285-4217)
<b>Additional Comments</b>	Contaminants of interest include heavy metals (Pu, U, etc), activation products (Co-60, Ni-63) and hazardous materials (PCBs, asbestos, Pb, Hg, etc.). Should cover concrete, asphalt, and metal surfaces.

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### OST TECHNOLOGIES

Technology Title	Technology ID
ALARA 1146 Strippable Coating	2314
Reactor Surface Contamination Stabilization (Reactor Stabilizer)	1839

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Electron Wind Generator (EWG)	Vendor Literature
Passive Aerosol Generator (PAG)	FIU LSDDP TIS
Polyurea Spray Elastomers	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-04-DD	Fixation of Airborne and Removable Contamination

## **DDFA Need Technical Responses**

AL-07-01-13-DD	Decontamination of Difficult Access Interior Contamination
OH-M903	Method for Controlling Off-Gassing and Removable Contamination from Tritium Piping
RF-DD03	Improved Interior Airborne Particulates Control
RF-DD17	Improved Dust Control Methods During Building Demolition for Structures that are not Free Releasable
RL-DD032	Contamination Fixative for 233-S
RL-DD04	TRU Waste Fixatives for PFP
RL-DD045	Fixatives for K3 Duct at WESF
RL-DD062	Method to Capture Airborne Alpha Contamination for 233-S
RL-DD07	Fixatives for Building 324 and 327
RL-SNF03	Fixatives for K-Basin

## DDFA Need Technical Responses

**Need ID Number** SR00-4013

**Need Title** Containment/Confinement Technologies

**Narrative Response to Need** Need can be broken down into two areas.

1) A technology for spill containment/confinement that will contain volume of the spill and neutralize the contaminants. Will provide contaminant identification through color coded "litmus" test. Should cover wide range of chemicals, hazardous and radioactive materials.

2) Technology that will contain airborne contamination while performing D&D work to help eliminate release to the environment and impact to adjoining surplus facilities.

**Focus Area** DDFA

**Federal Focus Area POC** Duda, John (304-285-4217)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
Oil Solidification	2313
Water Solidification	2312

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Liquid waste treatment technologies	D&D Tech. Notebook
Quik-Solid	D&D Tech. Notebook

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-00-01-03-DD	Containment and Confinement of Hazardous and Radioactively Contaminated Liquids Cost-Effectively; Containment of Airborne Contamination
CH-SS01-00	Detritiation of Water

## DDFA Need Technical Responses

**Need ID Number** SR00-4014

**Need Title** Basin Cleanup Technology

**Narrative Response to Need** Need for a technology to selectively remove Cs-137 and Sr-90 from basin water to near DOE free-release limits without transportation to Effluent Treatment Facility. Also needs to absorb tritium to low enough level to allow release of basin water to surface water. Must be self-contained and easy to transport.

**Focus Area** DDFA

**Federal Focus Area POC** Duda, John (304-285-4217)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
NURES Nuclide Removal System	2937
Specialized Separation Utilizing 3M Membrane Technology	1543

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Liquid waste treatment technologies	D&D Tech. Notebook
Rototherm Portable Concentrator	FIU LSDDP TIS

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### SIMILAR NEEDS

Site Need ID	Need Title
CH-SS01-00	Detritiation of Water
ID-7.2.10	Treatment Technologies to Treat Reactor Canal (TRA-660) Water

## DDFA Need Technical Responses

**Need ID Number** SR00-4015

**Need Title** Decontamination of Small Components

**Narrative Response to Need** Need is for a technology that can remove both surface and deep fixed contamination from small metal components, lead shielding bricks, and process area accessory components (i.e., riser plugs, transport sleeves, etc.), while minimizing surface damage. Technology should remove contamination to free-release limits and minimize secondary waste.

**Focus Area** DDFA

**Federal Focus Area POC** Duda, John (304-285-4217)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
ALARA 1146 Strippable Coating	2314
CORPEX Nuclear Decontamination Process	87
Ex-Situ Large Bore Pipe Decontamination and Characterization System	2375
Removal of Contaminants from Equipment and Debris, and Waste Minimization Using TECHXTRACT	1450
Soft Media Blast Cleaning	1899
Steam Vacuum Cleaning	1780

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Autowash/drier Unit	FIU LSDDP TIS
CO2 Pellet Cleaning	D&D Tech. Notebook
Fluorocarbon Surfactant Decontamination	FIU LSDDP TIS
High Pressure Decon Booths	D&D Tech. Notebook
Laser	FIU LSDDP TIS
Laser ZAWCAD	FIU LSDDP TIS
Mobile Decon Systems (super-heated water, abrasive blasting, or mechanical rotary systems)	D&D Tech. Notebook

## DDFA Need Technical Responses

Mobile Decontamination Facility	D&D Tech. Notebook
RADCON LASER (ERASER)	FIU LSDDP TIS
Sivablast System	D&D Tech. Notebook - ANS Robotics/Remote Systems

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### SIMILAR NEEDS

Site Need ID	Need Title
AL-07-01-13-DD	Decontamination of Difficult Access Interior Contamination
AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals
CH-MW03-99	Lead Removal, Segregation and Disposal
ID-7.2.14	Technology for Decontamination of Radionuclide Contaminated Lead Shot, Brick, and Sheeting for Free Release
ORDD-02	Improved Decontamination of Equipment, Machinery, Fabricated Metals & Other Materials
RL-DD021	Metal Decontamination and Recycling for the D&D Program
RL-DD059	Lead Decontamination for the S&M Program
RL-DD063	Decontamination of Transuranic Debris for 233-S

## DDFA Need Technical Responses

**Need ID Number** SR00-4016

**Need Title** Health and Safety Technologies

**Narrative Response to Need** Need is for a technology that can provide better cooling to workers in a heat stress environment as well as provide real-time personnel monitoring to monitor for signs of heat stress. Cooling equipment must be compatible with existing PPE or provide protection from hazardous materials and radioactive contamination. Monitoring equipment must be able to accommodate work crew of twelve and must consist of central monitoring station where graphic depiction of physiological parameters for each worker can be retrieved.

**Focus Area** DDFA

**Federal Focus Area POC** Duda, John (304-285-4217)

**Additional Comments**

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### OST TECHNOLOGIES

Technology Title	Technology ID
Advanced Worker Protection System	75
Heat Stress Monitoring System	1953
Personal Ice Cooling System (PICS)	1898
Wireless Remote Monitoring System	2104

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### NON-OST TECHNOLOGIES

Technology Title	Data Source
Air Tight Modular Workstation	FIU LSDDP TIS
Area Monitor Probe (high-range GM probe)	D&D Tech. Notebook
Digital Alarming Dosimeters	D&D Tech. Notebook
Dosimeters/Dose Mapping	D&D Tech. Notebook
Impact Visor	FIU LSDDP TIS
Kool Jacket	D&D Tech. Notebook
Kool Jacket Lite	D&D Tech. Notebook
Kool Vest	D&D Tech. Notebook

## DDFA Need Technical Responses

Wireless Remote Monitor-Plus

D&D Tech. Notebook

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### **SIMILAR NEEDS**

<b>Site Need ID</b>	<b>Need Title</b>
CH-DD04-99	Improved Worker Protection Equipment
OH-F042	Telemetric Monitoring of Heat Stress
RF-DD08	Improved Worker Protection Clothing and Systems



# **FY2000 NEEDS TRACKED BY DDFA**

## **APPENDIX A**

## Appendix A

### FY2000 Needs Tracked by DDFA

FA	Site Need ID	Need Title	Science Need	PtC Priority	Start Date	End Date	Potential Solution	
							OST	Non-OST
DDFA	AL-00-01-01-DD	Size Reduction Technology for TRU Mixed Waste	N	1	2000	2015	X	X
DDFA	AL-00-01-02-DD	Characterization Technologies for Verifying Presence or Absence of Contamination in Structures scheduled for D&D	N	2	2000	2006	X	X
DDFA	AL-00-01-03-DD	Containment and Confinement of Hazardous and Radioactively Contaminated Liquids Cost-Effectively; Containment of Airborne Contamination	N	1	2000	2006	X	X
DDFA	AL-00-01-04-DD	Fixation of Airborne and Removeable Contamination	N	1	2000	2006	X	X
DDFA	AL-00-01-05-DD	Alternative Cutting Techniques for Piping	N	2	2000	2006	X	X
DDFA	AL-00-01-06-DD	Effective Decontamination of Concrete	N	2	2000	2006	X	X
DDFA	AL-00-01-07-DD	Ex Situ Glove Box Size Reduction System	N	2	2000	2006	X	X
DDFA	AL-00-01-08-DD	Segregation Technology to Separate TRU and Non-TRU and Low Level and Free Release Waste	N	2	2000	2006	X	X
DDFA	AL-00-01-09-DD	Method for Decontaminating and Disposing of Tritium-Contaminated Pump Oil	N	1	2000	2006	X	X
DDFA	AL-00-01-10-DD	Accelerated 'Real Time' Volumetric Radioassay of Lead Forms	N	2	2000	2006		
DDFA	AL-00-01-11-DD	Increased Efficiency Waste Characterization Assay Methods	N	2	2000	2006	X	X
DDFA	AL-00-01-12-DD	Remote-Handled Size Reduction Technology	N	2	2000	2006	X	X
DDFA	AL-07-01-12-DD	Decontaminate and Decommission Radioactively Contaminated Facilities	N	2	2000	2005	X	X
DDFA	AL-07-01-13-DD	Decontamination of Difficult Access Interior Contamination	N	2	2000	2004	X	X
DDFA	AL-09-01-02-DD-S	Radiological Air Monitoring Needs for Current D&D/ER Operations	Y	1	2000	2000	X	X
DDFA	AL-09-01-04-DD-S	Methodology for Effective D&D of Large Environmental Sites	Y	1	2000	2004		X
DDFA	AL-09-01-11-MW	Characterization of Equipment Potentially Contaminated with Alpha Emitting Transuranic (TRU) Radionuclides	N	3	2000		X	X
DDFA	AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals	N	1	2000		X	X
DDFA	AL-09-01-13-DD	On-Site Quantitation of Plutonium and Americium in Soil and Concrete Rubble from D&D Projects	N	2	2000	2005	X	X
DDFA	AL-09-01-14-DD	Quantitation of Tritium in Concrete Rubble from D&D Projects	N	2	2000	2005	X	
DDFA	AL-09-01-15-DD	Disposal & Recycle Technologies for Scrap Uranium Chips and Turnings	N	2	2000			
DDFA	CH-DD01-00	Reduced Emission Metal Cutting	N	2	2000		X	X
DDFA	CH-DD01-99	Characterization for D&D of the Brookhaven Graphite Research Reactor	N	3	2000	2005	X	
DDFA	CH-DD04-99	Improved Worker Protection Equipment	N	2	2000		X	X
DDFA	CH-DD06-99	Size Reduction of Massive Metal Structures	N	2	2000		X	X
DDFA	CH-DD07-99	Decontamination of Fixed Surface Contamination of Concrete (thin layer removal)	N	2	2000		X	X
DDFA	CH-DD08-99	Remote Decontamination of In-ground Concrete Structures	N	2	2002		X	X
DDFA	CH-DD09-99	Tritium Removal by Laser Heating	N	2	2000		X	X
DDFA	CH-DD11-99	Remote Characterization of In-ground Concrete Structures	N	2	2001	2002	X	
DDFA	CH-SS01-00	Detritiation of Water	N	2	2000		X	X
DDFA	ID-7.2.03	Decontamination of Concrete Walls, Floors, Ceilings, and Corners	N	2	2000		X	X
DDFA	ID-7.2.06	Remote Characterization for Building Release, Large Area Surface Soil Characterization, and Characterization of Sumps, Debris, Underwater Areas, and Buried Pipes and Utilities	N	2	2002		X	X

**Appendix A**  
**FY2000 Needs Tracked by DDFA**

FA	Site Need ID	Need Title	Science Need	PtC Priority	Start Date	End Date	Potential Solution	
							OST	Non-OST
DDFA	ID-7.2.08	Robotics for D&D	N	2	2000		X	X
DDFA	ID-7.2.09	Rapid Wood Radiological Contamination Monitor	N	2			X	
DDFA	ID-7.2.10	Treatment Technologies to Treat Reactor Canal (TRA-660) Water	N	2	2000		X	X
DDFA	ID-7.2.11	Asbestos Wrapped/Insulated Pipe Removal and Packaging	N	2			X	
DDFA	ID-7.2.12	Cutting Equipment for Large Items in Above Ground or Underground Structures & Underwater	N	2			X	X
DDFA	ID-7.2.13	Penetrations in Concrete Floor and Demolition of Concrete Roof	N	2			X	X
DDFA	ID-7.2.14	Technology for Decontamination of Radionuclide Contaminated Lead Shot, Brick (including lead plate), and Sheeting for Free Release	N	2			X	X
DDFA	ID-7.2.15	Field Screening of Paint/Painted Surfaces to Identify Contamination such as; PCB, Lead, and other RCRA Metals in the Paint	N	2			X	
DDFA	ID-7.2.16	Field Screening of Lead (shot, bricks, sheeting) for Radionuclide Contamination	N	2			X	
DDFA	ID-7.2.17	Field Screening of Samples and Equipment Surfaces to Identify PCB Contamination	N	2			X	
DDFA	ID-7.2.18	General Use Remote Tools for Handling Small Items (e.g., pliers) or for Hooking to Rigging	N	2	2000			X
DDFA	ID-7.2.19	Remote/Robotic Technologies for Access and Deployment of Characterization & Sampling Tools	N	2	2000		X	X
DDFA	ID-7.2.20	Quantitative Underwater Radionuclide Characterization of Structures, Equipment, and Contaminated Pool Walls	N	2			X	X
DDFA	ID-7.2.21	Removal of Two Reactors as Single Unit	N	2			X	X
DDFA	ID-7.2.22	Concrete and Asphalt Recycle	N	2	2002		X	
DDFA	ID-7.2.23	Copper Wire Recycle	N	2	2001		X	X
DDFA	ID-7.2.24	Decontamination of Metal Debris	N	2	2000		X	X
DDFA	ID-7.2.25	Decontamination of Metal Pipes	N	2	2000		X	X
DDFA	ID-7.2.26	Decontamination of Metal Walls, Floors, Ceilings, and Corners	N	2	2000		X	X
DDFA	ID-7.2.27	Reuse of Metal Pipes, Lumber, Lead, and Other Metals	N	2	2002		X	
DDFA	ID-7.2.28	Remote Demolition of Concrete Structures	N	2	2002		X	X
DDFA	ID-7.2.29	Remote Demolition of Machinery	N	2	2002		X	X
DDFA	ID-7.2.30	Remote Demolition of Metal Structures	N	2	2002		X	X
DDFA	ID-7.2.31	Remote Demolition of Piping	N	2	2002		X	X
DDFA	ID-S.2.05	Understanding the Physics and Chemistry of Concrete Decontamination	Y	2	2000			
DDFA	ID-S.2.06	Understanding the Physics and Chemistry of Metal Decontamination	Y	2	2000			
DDFA	NV07-0001-03	Oversize TRU Waste Size Reduction	N	2	2000	2003	X	
DDFA	NV09-0001-09	Nonintrusive Surveys in Pipes and Vessels	N	3	2002	2007	X	
DDFA	NV10-0001-10	Improved Detection & Characterization of Large Metal & Concrete Surfaces	N	3	2002	2006	X	X
DDFA	OH-C002	Decontamination of Mop Heads and Rags to Reduce TRU Waste Volume and Minimize Radioactive Waste	N	3	2000	2004		
DDFA	OH-C901	Robotic Device to Improve Characterization of Underground Pipe Lines	N	2	1999	2003	X	X
DDFA	OH-F010	Safe and Efficient Process Piping and Conduit Dismantlement	N	2	2000	2006	X	X

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FA	Site Need ID	Need Title	Science Need	PtC Priority	Start Date	End Date	Potential Solution	
							OST	Non-OST
DDFA	OH-F027	Improved Equipment Dismantlement	N	2	2000	2006	X	X
DDFA	OH-F042	Telemetric Monitoring of Heat Stress	N	2	2000	2006	X	
DDFA	OH-F047	Pulverizing Concrete for Site Aggregate Needs	N	2	2000	2006	X	
DDFA	OH-M010	Tritium Robotics	N	2	2000		X	X
DDFA	OH-M011	Tritides Air Monitor	N	1	1999	2000		
DDFA	OH-M901	Improved Facility Survey Techniques	N	1	2000		X	X
DDFA	OH-M902	Decontamination Techniques for Tritiated Gloveboxes	N	2	2000		X	X
DDFA	OH-M903	Method for Controlling Off-Gassing and Removable Contamination from Tritium Piping	N	2	2000		X	X
DDFA	OH-M905	Treatment of Tritiated Pump Oils and Mercury	N	1	2000		X	
DDFA	OH-M909	Automated Dust Suppression System	N	3	2000		X	X
DDFA	OH-WV-902	Decontamination of HLW Canisters	N	1	2002		X	X
DDFA	OH-WV-903	Vitrification Expended Material Processing	N	1	2000		X	X
DDFA	OH-WV-909	Remote Handled Waste Processing	N	1	2001		X	X
DDFA	OH-WV-910	Size Reduction of Components	N	3	2000		X	X
DDFA	OH-WV-913	Far-Field Radioactivity Measurement	N	2	2000		X	X
DDFA	OK99-23	Field Surveillance Device for Detection of Radium-226	N	1	2000	2000		
DDFA	ORDD-01	Improved Characterization of Equipment, Machinery, Fabricated Metals & Other Materials	N	1	2000	2004	X	X
DDFA	ORDD-02	Improved Decontamination of Equipment, Machinery, Fabricated Metals & Other Materials	N	2	2000	2004	X	X
DDFA	ORDD-03	Improved Decontamination of Facility Concrete and Painted Surfaces	N	2	2001		X	X
DDFA	ORDD-06	Improved Remote Decontamination Methods	N	3	2001			X
DDFA	ORDD-07	Remote Dismantlement Methods	N	3	2001		X	X
DDFA	ORDD-08	Mercury Removal from Metal and Porous Surfaces	N	3	2000			
DDFA	ORDD-09	Improved Non-Thermal Cutting of Process Equipment	N	2	2000	2004	X	X
DDFA	ORDD-12	Improved Characterization of Buildings and Facilities	N	1	2001	2004	X	X
DDFA	RF-DD01	Improved Decommissioning Characterization for Distinguishing Between TRU and Low-Level Contamination	N	2	2000	2006	X	X
DDFA	RF-DD02	High Speed Integrated Characterization System for (1) Radioactive, (2) Hazardous and (3) Toxic Contamination	N	2	2000	2006	X	X
DDFA	RF-DD03	Improved Interior Airborne Particulates Control	N	2	2000	2006	X	X
DDFA	RF-DD04	Improved Measurement Techniques for Free Release of Property and Salvageable Equipment Contaminated with Radionuclides	N	2	2000	2006		X
DDFA	RF-DD07	Improved Disposition of Raschig Ring Tanks	N	2	2000			X
DDFA	RF-DD08	Improved Worker Protection Clothing and Systems	N	2	2000	2006	X	X
DDFA	RF-DD09	Improved Decontamination of Porous Surfaces in Preparation for Building Demolition	N	2	2000	2006	X	X
DDFA	RF-DD10	Improve Decontamination of Non-Porous Building Property and Structures	N	2	2000	2006	X	X

**Appendix A**  
**FY2000 Needs Tracked by DDFA**

FA	Site Need ID	Need Title	Science Need	PtC Priority	Start Date	End Date	Potential Solution	
							OST	Non-OST
DDFA	RF-DD11	Improved Size Reduction of Contaminated Equipment and Demolition Waste	N	2	2000	2006	X	X
DDFA	RF-DD15	Real-Time Beryllium Surface Characterization	N	2	2000	2006	X	X
DDFA	RF-DD16	Real-Time Beryllium Air Monitoring	N	2	2000	2006	X	X
DDFA	RF-DD17	Improved Dust Control Methods During Building Demolition for Structures that are not Free Releasable	N	1	2000	2006	X	X
DDFA	RF-DD18	Real-Time Radiation Air Monitoring During Building Demolition	N	1	2000	2006	X	X
DDFA	RF-DD20	Removal of Large Contaminated Equipment that is Entombed in Concrete	N	1	2001	2004	X	X
DDFA	RF-DD21	Removal of Pb Shielding from Gloveboxes and other Process Equipment	N	1	2000	2006	X	
DDFA	RL-DD010	Radiation Hardened Robotics for Building 324	N	2	2000		X	X
DDFA	RL-DD011	Structural Integrity Inspection Technologies - 324/327 Buildings Hot Cell Liners	N	2	2000	2001	X	X
DDFA	RL-DD02	Glove Box Size Reduction System for PFP	N	1	2002	2014	X	X
DDFA	RL-DD021	Metal Decontamination and Recycling for the D&D Program	N	2	1999		X	X
DDFA	RL-DD022-S	Photon-Assisted Decontamination Chemistry	Y	2				
DDFA	RL-DD023-S	Cesium Source Identification	Y	1				
DDFA	RL-DD025-S	Effluent Capture	Y	1				
DDFA	RL-DD026-S	Contaminant Binding Science Need	Y	1				
DDFA	RL-DD027-S	Cesium Integrity Assessment	Y	2				
DDFA	RL-DD029	Critically Safe Vacuum System for 233-S	N	1	1999			
DDFA	RL-DD029-S	Algae Corrosion and Growth Inhibition	Y	1				
DDFA	RL-DD03	Terminal Clean-out and TRU Waste Decontamination of PFP	N	1	2002	2014	X	X
DDFA	RL-DD030	Cutting Plutonium Contaminated Pipe for 233-S	N	2	1999		X	X
DDFA	RL-DD030-S	Polystyrene Cube Analysis for the Plutonium Finishing Plant (PFP)	Y	1				
DDFA	RL-DD031	Non-Intrusive Detection of Pipe Contents for 233-S	N	2	1999		X	X
DDFA	RL-DD031-S	Polystyrene Off-Gas Analysis for the Plutonium Finishing Plant (PFP)	Y	1				
DDFA	RL-DD032	Contamination Fixative for 233-S	N	2	1999			X
DDFA	RL-DD032-S	Measurement of Moisture Content in Plutonium Oxides and other Materials for the Plutonium Finishing Plant (PFP)	Y	2				
DDFA	RL-DD033	Field Screening for Hazardous Materials for 105-F and 105-DR Reactors	N	2	1999	2004	X	X
DDFA	RL-DD033-S	Model for 324 Building Waste	Y	1	1999			
DDFA	RL-DD034	Remote/Robotic Technologies for Access and Deployment of Characterization and Sampling Tools for CDI	N	1	1999	2000	X	X
DDFA	RL-DD034-S	Thermodynamic Data for Plutonium Nitrate	Y	1	2000			
DDFA	RL-DD035	Visual/Spatial Imaging of the 221-U Facility and Equipment for CDI	N	2	1999	2000	X	X
DDFA	RL-DD035-S	Neutron Detection for Sorting Remote-handled Radioactive Waste into TRU vs Non-TRU	Y	1	1999		X	X
DDFA	RL-DD036	General Radiation Surveys of Concrete and Equipment in the Materials Processing Facilities for CDI	N	2	1999		X	X
DDFA	RL-DD036-S	Modeling Thermodynamic Properties	Y	2	2000			

**Appendix A**  
**FY2000 Needs Tracked by DDFA**

FA	Site Need ID	Need Title	Science Need	PtC Priority	Start Date	End Date	Potential Solution	
							OST	Non-OST
DDFA	RL-DD037	Detection of Free Standing Liquid in Equipmant (e.g., tanks) and Piping for CDI	N	1	1999		X	
DDFA	RL-DD038	Characterization of Liquids in Equipmant (e.g., tanks) and Piping for CDI	N	2	1999		X	X
DDFA	RL-DD039	Characterization of Solids (Sediment/Sludge/Dust) on Floors and Walls, and in Equipment in the Materials Processing Facilities for CDI	N	2	1999		X	X
DDFA	RL-DD04	TRU Waste Fixatives for PFP	N	1	2002	2014	X	X
DDFA	RL-DD040	Characterization of Concrete Floors and Walls in the Materials Processing Facilities for CDI	N	2	1999		X	X
DDFA	RL-DD044	Cesium and Strontium Inventory Removal From K3 Duct at WESF	N	2	1999	2017	X	X
DDFA	RL-DD045	Fixatives for K3 Duct at WESF	N	3	1999	2017	X	X
DDFA	RL-DD046	Clean-Out of Isolated Piping Systems in Building 324	N	2	2001	2003	X	X
DDFA	RL-DD047	Remote Viewing for Hot Cells in Buildings 324 and 327	N	2	2000	2001	X	X
DDFA	RL-DD048	Volume Reduction of Equipment for CDI	N	2	2001		X	
DDFA	RL-DD049	Waste Encapsulation and Stabilization for CDI	N	2	2001		X	
DDFA	RL-DD05	Characterization of Building 324 and 327	N	2	2000	2007	X	X
DDFA	RL-DD050	Sealant Technologies for CDI	N	1	2001			
DDFA	RL-DD051	High Profile Surface Barrier for CDI	N	1	2006			
DDFA	RL-DD052	Long-term Monitoring for CDI	N	2	2001			
DDFA	RL-DD053	Operational Modeling for CDI	N	3	2001		X	X
DDFA	RL-DD054	Electronic Job Control System for the S&M Program	N	3	1999			
DDFA	RL-DD055	Remote Monitoring System Upgrades for the S&M Program	N	3	1999			
DDFA	RL-DD056	Facility Life Model for S&M Program	N	2	1999			
DDFA	RL-DD057	Long-Lived Roof for PUREX	N	2	2002			
DDFA	RL-DD058	Method to Control Deep Rooted Plants for the S&M Program	N	3	1999			
DDFA	RL-DD059	Lead Decontamination for the S&M Program	N	3	1999			
DDFA	RL-DD06	Decontamination of Building 324 and 327	N	2	2000	2001	X	X
DDFA	RL-DD060	Characterization for Waste Handling, Packaging and Processing for 233-S	N	2	1999	2001	X	
DDFA	RL-DD061	Remote/Robotic Systems for 233-S	N	1	1999	2001	X	X
DDFA	RL-DD062	Method to Capture Airborne Alpha Contamination for 233-S	N	2	1999	2001		
DDFA	RL-DD063	Decontamination of Transuranic Debris for 233-S	N	2	1999	2001	X	X
DDFA	RL-DD064	Characterization of the 105-F Spent Fuel Basin	N	2	1999		X	
DDFA	RL-DD065	Backfill Removal and Segregation for the 105-F Spent Fuel Basin	N	2	1999	2004	X	X
DDFA	RL-DD066	Material Removal and Segregation for the 105-F Spent Fuel Basin	N	2	1999	2004	X	X
DDFA	RL-DD07	Fixatives for Building 324 and 327	N	2	2003	2007	X	X
DDFA	RL-DD08	Remote Cutting Technologies for Building 324 and 327	N	2	2000	2002	X	X

**Appendix A**  
**FY2000 Needs Tracked by DDFA**

FA	Site Need ID	Need Title	Science Need	PtC Priority	Start Date	End Date	Potential Solution	
							OST	Non-OST
DDFA	RL-DD09	Tank Remediation for Building 324	N	2	2000	2007	X	X
DDFA	SR00-1014	Cleaning of Alpha Contaminated Launderables	N	2	2001		X	
DDFA	SR00-4001	Dismantlement of Large and/or Complex Equipment and Structures	N	3	2002	2006	X	X
DDFA	SR00-4002	Characterization of Contaminated Surfaces	N	3	2002	2003	X	X
DDFA	SR00-4003	Material Recycle (Process Equipment, Metal, Steel, and Concrete)	N	3	2002	2006	X	X
DDFA	SR00-4004	Decontamination of Contaminated Concrete	N	3	2001	2007	X	X
DDFA	SR00-4005	Characterization of Inaccessible Areas	N	3	2000	2002	X	X
DDFA	SR00-4006	Asbestos Treatment to Allow Reuse	N	3	2001	2003	X	X
DDFA	SR00-4007	Characterization of Volumetrically Contaminated Surfaces	N	3	2001	2005	X	
DDFA	SR00-4008	Dismantlement of Concrete-Encased Piping	N	3	2000	2004	X	X
DDFA	SR00-4009	Improved Exhaust Treatment Systems	N	3	2001	2005		X
DDFA	SR00-4010	Characterization Data Management	N	3	2000	2002	X	X
DDFA	SR00-4011	Waste Characterization	N	3	2003	2005	X	X
DDFA	SR00-4012	Stabilization of Contaminated Equipment/Components/Surfaces	N	3	2001	2003	X	X
DDFA	SR00-4013	Containment/Confinement Technologies	N	3	2001	2007	X	X
DDFA	SR00-4014	Basin Cleanup Technology	N	3	2000	2002	X	X
DDFA	SR00-4015	Decontamination of Small Components	N	3	2000	2002	X	X
DDFA	SR00-4016	Health and Safety Technologies	N	3	2000	2002	X	X
MWFA	AL-07-01-14-MW	Characterization of TRU Waste Now Stored in Fiberglass Reinforced Plywood Boxes LANL	N	2	1999	2000	X	X
MWFA	AL-08-01-17-MW	Certifiability of Newly Generated TRU Waste	N	3	2000	2006	X	X
MWFA	AL-07-01-11-MW	Waste Sorting and Characterization	N	3	2000	2005	X	X
MWFA	AL-09-01-06-MW	Mobile Neutron Assay System (Mn/aS) for SWBs	N	3	2000	2001	X	X
MWFA	CH-MW03-99	Lead Removal, Segregation and Disposal	N	2	2000		X	X
MWFA	CH-MW07-99	Stabilization of Tritium Organic Waste	N	3	2000		X	X
MWFA	OH-WV-901	Characterization of Low Level and Transuranic Waste	N	2	2000		X	X
MWFA	OK99-06	Mobile Non-Destructive Assay for TRU Waste Boxes	N	1	1999		X	X
MWFA	RL-MW02	Remotely Controlled Size and Volume Reduction Techniques for RH MLLW and RH TRUW	N	1	2002		X	X
MWFA	RL-MW04	Remote Decontamination of RH-TRUW Debris to Support Reclassification into Non-TRU Category	N	2	2000		X	
NMFA	RL-DD01	Cesium/Strontium Capsule Leak Detection System for WESF	N	2	1999	2020		X
NMFA	RL-DD041	Capsule Integrity Assessment Method for WESF	N	2	1999	2017	X	X
SNF	RL-SNF01	Contaminant Mapping of K-Basins	N	3	2004	2007	X	X
SNF	RL-SNF02	Decontamination of K-Basin Pool	N	2	2004	2007		
SNF	RL-SNF03	Fixatives for K-Basin	N	3	2004	2007	X	X

**Appendix A**  
**FY2000 Needs Tracked by DDFA**

FA	Site Need ID	Need Title	Science Need	PtC Priority	Start Date	End Date	Potential Solution	
							OST	Non-OST
SNF	RL-SNF05	Underwater Fuel Rack Cutting System	N	2	2001	2005	X	X
SNF	RL-SNF06	Sludge Treatment Process	N	1	2004	2005	X	X
TFA	OH-WV-908	Decontamination of High-Level Waste Contaminated Equipment	N	3	2000		X	X
TFA	SR00-2029	Alternate DWPF Canister Decon Technology	N	3	2006		X	X
TFA	SR00-2031	Develop Remote Technology to Improve DWPF Operations	N	3	2002		X	X
TFA	SR00-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment	N	3	2002		X	X
	Non-DDFA need tracked by DDFA							
	Not considered a "true" DDFA need by DDFA; but tracked							



# **PROJECT BASELINE SUMMARIES**

## **APPENDIX B**

## Appendix B

### Project Baseline Summaries

Field Code	Proj Key	Ops Off.	PBS Title	H V	PBS Costs - Constant 1999 \$			Project FY Start Date	Project FY End Date
					Total Lifecycle	FY97-FY06	FY07+		
The following 70 PBS's have associated DDFA-tracked science and technology needs									
AL009	0562	AL	LANL ER		\$515,332	\$403,544	\$111,788	1997	2070
AL012	0471	AL	LANL Waste Management - Newly Generated Waste		\$61,590	\$61,590	\$0	1997	1998
AL013	0472	AL	LANL Waste Management - Legacy Waste	X	\$600,412	\$327,423	\$272,989	1997	2020
CH-ANLEDD	0003	CH	ANL-E D&D Actions		\$33,410	\$33,410	\$0	1997	2002
CH-ANLERA	0002	CH	ANL-E Remedial Actions		\$32,219	\$25,743	\$6,476	1997	2035
CH-ANLEWO	0004	CH	ANL-E Waste Operations		\$562,163	\$77,155	\$485,008	1997	2070
CH-BRNLDD	0007	CH	BNL D&D Actions		\$33,940	\$33,940	\$0	1997	2005
CH-PPPLRA	0027	CH	PPPL Remedial Actions		\$2,699	\$2,699	\$0	1997	2004
CH-PPPLWO	0028	CH	PPPL Waste Operations		\$208,603	\$28,646	\$179,957	1997	2070
ID-ER-110	0564	ID	Decontamination & Dismantlement (D&D)		\$474,255	\$100,774	\$373,481	1997	2045
NV214	0226	NV	Industrial Sites		\$272,161	\$175,420	\$96,741	1997	2015
NV350	0442	NV	TRU/Mixed TRU		\$54,471	\$46,831	\$7,640	1997	2009
OH-CL-01	0230	OH	King Avenue Site Decontamination		\$18,053	\$18,053	\$0	1997	2000
OH-CL-02	0231	OH	West Jefferson Site Decontamination		\$11,206	\$11,206	\$0	1998	2000
OH-FN-02	0523	OH	Facility D & D		\$182,231	\$182,231	\$0	1997	2005
OH-FN-03	0524	OH	On-Site Disposal Facility	X	\$214,205	\$209,343	\$4,862	1997	2008
OH-FN-06	0530	OH	Soils		\$198,344	\$186,543	\$11,801	1997	2008
OH-FN-07	0526	OH	Fernald Silos	X	\$384,776	\$362,523	\$22,253	1997	2008
OH-MB-02	0574	OH	Main Hill Tritium		\$182,990	\$182,990	\$0	1997	2004
OH-WV-01	0249	OH	HLW Vitrification & Tank Heel Waste Processing	X	\$265,713	\$265,713	\$0	1997	2002
OH-WV-02	0250	OH	Site Transition, Decommissioning, & Completion	X	\$1,107,821	\$497,421	\$610,400	1997	2015
OH-WV-04	0252	OH	Project Management/Site Support		\$532,918	\$311,864	\$221,054	1997	2015
OK-010	0267	OK	Lab for Energy-Related Health Research ER		\$30,191	\$30,191	\$0	1997	2006
OK-021	0462	OK	LLNL Base Program		\$864,762	\$213,915	\$650,847	1997	2070
OR-231	0091	OR	Y-12 D&D		\$32,417	\$27,719	\$4,698	2004	2007
OR-331	0097	OR	ORNL D&D - Defense		\$216,368	\$211,777	\$4,591	1997	2008
OR-431	0137	OR	ETTP Decontamination & Decommissioning - Def		\$16,596	\$16,596	\$0	1999	2004
OR-433	0139	OR	ETTP D&D - D&D Fund		\$323,667	\$323,242	\$425	1997	2007
OR-523	0143	OR	Paducah Remedial Action		\$423,542	\$218,896	\$204,646	1997	2015
OR-623	0146	OR	Portsmouth Remedial Action		\$127,023	\$125,638	\$1,385	1997	2007
OR-823	0169	OR	Offsite Projects - D&D Fund						
RF014	0351	RF	Industrial Zone Closure Project		\$413,205	\$413,152	\$53	1997	2007
RF015	0585	RF	Misc. Production Zone Cluster Closure Project		\$139,403	\$139,403	\$0	1997	2006
RF016	0355	RF	Building 371 Cluster Closure Project		\$332,571	\$332,571	\$0	1997	2006
RF017	0357	RF	Building 707/750 Cluster Closure Project		\$312,007	\$312,007	\$0	1997	2006

## Appendix B

### Project Baseline Summaries

Field Code	Proj Key	Ops Off.	PBS Title	H V	PBS Costs - Constant 1999 \$			Project FY Start Date	Project FY End Date
					Total Lifecycle	FY97-FY06	FY07+		
RF018	0359	RF	Building 771/774 Cluster Closure Project	X	\$244,880	\$244,880	\$0	1997	2005
RF019	0361	RF	Building 776/777 Cluster Closure Project		\$255,388	\$255,388	\$0	1997	2005
RF020	0363	RF	Building 881 Cluster Closure Project		\$181,130	\$181,130	\$0	1997	2006
RF021	0365	RF	Building 991 Cluster Closure Project		\$44,230	\$44,230	\$0	1997	2006
RF027	0375	RF	Analytical Services Project		\$77,058	\$76,705	\$353	1997	2007
RL-ER05	0419	RL	Facility Surveillance and Maintenance		\$432,913	\$121,636	\$311,277	1997	2045
RL-ER06	0420	RL	Decontamination and Decommissioning		\$1,807,161	\$173,302	\$1,633,859	1997	2045
RL-TP02	0402	RL	WESF Sub-Project		\$240,037	\$126,400	\$113,637	1997	2020
RL-TP05	0405	RL	PFP Deactivation	X	\$2,336,937	\$1,118,653	\$1,218,284	1997	2030
RL-TP08	0408	RL	324/327 Facility Transition Project		\$318,917	\$307,190	\$11,727	1997	2007
RL-WM01	0393	RL	Spent Nuclear Fuels Project	X	\$1,486,011	\$1,464,199	\$21,812	1997	2007
RL-WM04	0396	RL	Solid Waste Treatment		\$1,819,004	\$531,528	\$1,287,476	1997	2035
SR-FA02	0499	SR	F Canyon Deactivation Project		\$80,282	\$32,610	\$47,672	2002	2015
SR-FA03	0500	SR	FB Line Deactivation Project		\$50,250	\$20,474	\$29,776	2002	2015
SR-FA04	0501	SR	H Canyon Deactivation Project		\$69,931	\$33,304	\$36,627	2004	2009
SR-FA05	0502	SR	HB Line Deactivation Project		\$31,799	\$15,129	\$16,670	2004	2009
SR-FA06	0503	SR	235-F Deactivation Project		\$70,610	\$28,801	\$41,809	2002	2015
SR-FA07	0504	SR	Old HB Line Deactivation Project		\$25,476	\$12,171	\$13,305	2004	2009
SR-FA08	0505	SR	P Reactor Deactivation Project		\$11,441	\$0	\$11,441	2007	2015
SR-FA09	0506	SR	C Reactor Deactivation Project		\$11,439	\$0	\$11,439	2007	2015
SR-FA10	0507	SR	R Reactor Deactivation Project		\$13,061	\$0	\$13,061	2007	2015
SR-FA11	0508	SR	K Reactor Deactivation Project		\$11,616	\$0	\$11,616	2011	2020
SR-FA12	0509	SR	L Reactor Deactivation Project		\$11,672	\$0	\$11,672	2036	2045
SR-FA13	0510	SR	RBOF Deactivation Project		\$8,378	\$0	\$8,378	2008	2015
SR-FA14	0511	SR	D Area Deactivation Project		\$2,333	\$0	\$2,333	2051	2055
SR-FA15	0512	SR	M Area Deactivation Project		\$10,460	\$0	\$10,460	2007	2015
SR-FA16	0513	SR	F-Area Monitoring		\$1,574,292	\$6,001	\$1,568,291	1997	2070
SR-FA17	0514	SR	H-Area Monitoring		\$1,166,317	\$0	\$1,166,317	2007	2070
SR-FA18	0515	SR	M Area Monitoring Project		\$207,371	\$86,538	\$120,833	1997	2070
SR-FA19	0516	SR	D Area Monitoring Project		\$84,963	\$8,195	\$76,768	2000	2070
SR-FA20	0517	SR	Reactors Monitoring Project		\$736,510	\$135,386	\$601,124	1997	2070
SR-FA22	0519	SR	RBOF Monitoring Project		\$78,057	\$0	\$78,057	2007	2070
SR-HL02	0037	SR	F-Tank Farm		\$1,251,885	\$545,704	\$706,181	1997	2030
SR-HL05	0040	SR	Vitrification	X	\$3,898,657	\$1,297,978	\$2,600,679	1997	2030
SR-SW07	0050	SR	Pollution Prevention		\$72,485	\$18,683	\$53,802	1997	2035

## Appendix B

### Project Baseline Summaries

Field Code	Proj Key	Ops Off.	PBS Title	H V	PBS Costs - Constant 1999 \$			Project FY Start Date	Project FY End Date
					Total Lifecycle	FY97-FY06	FY07+		
The following 43 PBS's do not have associated DDFA needs but could possibly benefit from DDFA supported RD&D efforts									
AL014	0473	AL	Pantex Plant Site Remediation Project		89,562	74,752	14,810	1997	2015
AL015	0593	AL	Pantex Waste Operations		22,127	22,127	0	1997	1998
AL018	0135	AL	Sandia ER Project		232,125	214,620	17,505	1997	2040
AL019	0136	AL	Pinellas Plant Close-out and Administrative Activities		168,437	98,285	70,152	1997	2050
AL024	0478	AL	GJO All Other Projects		199,606	65,663	133,943	1997	2070
AL030	0183	AL	Land Parcels Transfer at LANL		419,447	340,772	78,675	2000	2070
CH-ANLWRA	0029	CH	ANL-W Remedial Actions		7,934	7,934	0	1997	2003
ID-HLW-101	0193	ID	High-Level Waste Pretreatment	X	921,786	511,263	410,523	1997	2015
ID-OIM-110	0568	ID	Pre-FY2006 Surplus Facilities Deactivation		96,650	77,671	18,979	1997	2010
ID-OIM-111	0214	ID	Post-FY2006 Surplus Facility Deactivation		71,533	0	71,533	2011	2035
ID-OIM-112	0215	ID	Pre-Deactivation S&M		37,511	37,511	0	1997	2006
ID-OIM-113	0216	ID	Post-Deactivation S&M		26,881	0	26,881	2007	2045
ID-WM-101	0570	ID	INEEL LLW/MLLW/Other Waste Program		215,408	215,408	0	1997	2006
OH-AB-01	0228	OH	Ashtabula Remediation		100,727	99,633	1,094	1997	2020
OH-FN-01	0522	OH	Facility Shutdown		275,497	262,464	13,033	1997	2008
OH-MB-01	0573	OH	Tritium Operations		32,815	32,815	0	1997	1998
OH-MB-04	0575	OH	Main Hill Rad		24,458	24,458	0	1997	2004
OH-MB-06	0577	OH	S&M/PP Hill		35,425	35,425	0	1997	2004
OH-MB-07	0578	OH	Test Fire Valley		55327	55327	0	1997	2004
OK-007	0263	OK	ETEC Remediation		114,788	112,010	2,778	1997	2007
OK-012	0271	OK	Hot Cell Facility D&D at General Atomics		12,595	12,595	0	1997	2005
OK-013	0461	OK	General Electric D&D (Environmental Restoration)		20,349	17,823	2,526	1999	2007
OK-043	0588	OK	Separations Process Research Unit		194,586	39,351	155,235	2000	2015
OR-332	0098	OR	ORNL Decontamination & Decommissioning - Non-Def		40,126	40,126	0	1997	1999
OR-381	0129	OR	ORNL Nuclear Materials & Facility Stabilization		39,650	39,650	0	1997	2005
OR-821	0162	OR	Offsite Projects - Defense		187,800	187,398	402	1997	2015
RF002	0584	RF	Waste Management Project	X	881,160	881,147	13	1997	2007
RF013	0349	RF	Closure Caps Project		36,583	35,012	1,571	1999	2007
RF022	0586	RF	Building 779 Cluster Closure Project	X	76,450	76,450	0	1997	2004

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### Project Baseline Summaries

Field Code	Proj Key	Ops Off.	PBS Title	H V	PBS Costs - Constant 1999 \$			Project FY Start Date	Project FY End Date
					Total Lifecycle	FY97-FY06	FY07+		
RF030	0380	RF	K-H Project Mgmt.		1,058,253	1,057,709	544	1997	2007
RL-ER07	0421	RL	Post Closure S&M		59,237	2,220	57,017	1997	2045
RL-ER09	0423	RL	N Reactor Deactivation		27,934	27,934	0	1997	1998
RL-TP01	0401	RL	B-Plant Sub-Project		53,668	53,668	0	1997	2000
RL-TP03	0403	RL	PUREX Sub-Project		2,774	2,774	0	1998	2001
RL-TP04	0404	RL	300 Area/SNM Sub-Project		25,963	25,963	0	1997	2001
RL-TP09	0409	RL	K Basin Deactivation		0	0	0	2002	2007
RL-TP10	0410	RL	Accelerated Deactivation		370,349	87,877	282,472	1998	2040
RL-TP11	0411	RL	Advanced Reactors Transition		110,718	110,718	0	1997	2004
RL-TP13	0413	RL	Landlord Program		479,126	187,760	291,366	1997	2050
RL-TP14	0414	RL	Hanford 300 Area Revitalization		330,701	99,362	231,339	1998	2035
SR-ER08	0485	SR	Facility Disposition Program Planning		0	0	0	1999	2030
SR-ER09	0486	SR	HWCTR Projects		8,746	8,746	0	1997	1998
SR-IN13	0120	SR	Decontamination of Lab Facilities 772-F & 773-A		14,438	14,438	0	1999	2002

# **DDFA PRODUCT LINE AND WORK PACKAGE SUMMARIES**

## **APPENDIX C**

## **Appendix C**

### **DDFA Product Line and Work Package Summaries**

Appendix C provides descriptions of the active and planned product lines and work packages supported by the DDFA. The work packages are presented in priority order based on the FY2001 Corporate Review Budget (CRB) process conducted in the spring of FY1999. Not all work packages are funded at this time nor, based on the CRB, is funding expected until FY2002, at the earliest.

#### **Product Lines**

##### Reactor Facilities

There are 14 surplus production reactors within the DOE weapons complex--nine at Hanford and five at Savannah River--which represent a significant portion of EM's long-term D&D mortgage. There also exist over 100 test and research reactors throughout DOE (INEEL has more than 50) and U.S. universities that will require D&D. More than half have already been placed in shutdown mode. In addition to these DOE and university reactors, the U.S. commercial nuclear power companies have 109 nuclear reactors. Many of these reactors are approaching their life expectancy and will require D&D. Improved and innovative technologies are required to facilitate D&D of these reactors to a degree such that they can be put in interim safe storage for a long period of time (up to 50 years) with minimal S&M requirements. Hanford has completed interim safe storage of the 105-C Reactor Facility and plans to complete two more, and possibly a third, by FY2006 (F, DR and N Reactors). In addition to the reactor cores and central reactor facility, this product line also addresses needs associated with highly contaminated fuel pools and their associated facilities. These facilities require improved technologies for characterization, decontamination and dismantlement of underwater structures and equipment.

##### Radionuclide Separation Facilities

Separation process facilities are typically highly contaminated aging structures, and represent the largest portion of EM's surplus facility inventory. Improved, innovative technologies are required to deactivate and decommission radionuclide separation facilities, including gaseous diffusion plants, fuel reprocessing canyons and a wide variety of specific types of facilities (such as chemical separation, uranium recycling, lithium enrichment, heavy water production and tritium production). The main focus of this product line is to reduce the risks and costs associated with the deactivation and decommissioning of these nuclear facilities and to lower long-term S&M costs.

Deactivation and decommissioning of surplus chemical and isotope separation facilities are expected to produce large quantities of potentially valuable materials, including concrete and contaminated metals. At present, most of these materials are disposed of as waste, as no cost-effective technologies exist to characterize and/or decontaminate them for free release. Decontamination of materials to free release will result in substantial D&D life-cycle costs savings. Technologies to characterize, separate (contaminated and non-contaminated portions), and decontaminate products for internal DOE recycle or free release will be demonstrated and deployed. Without this effort, most of the material generated during D&D will be disposed of as low-level waste resulting in high life-cycle cost. Recovery of these materials will allow the sites

## Appendix C

### DDFA Work Package Summaries

not only to avoid costly disposal costs, but will also provide the nation with valuable resources thereby reducing the necessity to manufacture products from virgin materials.

#### Fuel and Weapon Components Fabrication Facilities

Fuel and weapon components fabrication facilities present the second largest group of surplus facilities facing D&D. These facilities include fuel and target fabrication facilities, weapons component fabrication facilities and weapons assembly, dismantlement, modification and maintenance facilities. Weapons production activities within these facilities resulted in highly contaminated facilities from hazardous wastes, solvents, heavy metals, high explosives and nuclear waste (especially plutonium and highly enriched uranium). Many of the operations associated with fuel and weapons components fabrication were conducted within glove boxes. As such, numerous sites including Rocky Flats, LANL, Hanford and Savannah River have contaminated glove boxes that must be dispositioned. Improved technologies for glove box characterization, decontamination, size reduction, and waste handling and packaging will be invested within this product line.

#### Laboratory Facilities

The Laboratory Facilities product line includes those facilities that were involved in the research, development and testing (RD&T) of weapons production processes and of the RD&T of the weapons and weapons components themselves. Many of these facilities have highly contaminated hot cells and glove boxes. In addition, unlike the massive weapons production facilities, many of these facilities are small and require improved technologies capable of operating in confined or limited access areas.

Beginning in FY2000, DDFA will shift scope previously associated with Radionuclide Separation Facilities product line to the Laboratory Facilities product line to address technical needs associated with DOE's storage and treatment facilities. This shift is due, in part, to the many contaminated hot cells associated with these facilities and in an attempt to provide a more balanced program. Facilities identified within this scope include the waste vitrification facility at West Valley, the Defense Waste Processing Facility (DWPF) at Savannah River, Hanford's Waste Encapsulation Storage Facility (WESF), and the Waste Calcining Facility at Idaho. The majority of these facilities still serve an active mission for DOE and have yet to develop baseline life-cycle costs and schedules for their ultimate D&D. None the less, the sites have begun to identify near-term and long-term D&D technical challenges. As DDFA shifts from its near-term LSDDP strategy to a longer-term R&D strategy, a greater emphasis will be placed on these facilities and their associated technical needs.



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### DDFA Work Package Summaries

#### Work Packages

##### DD08: D&D of Processing Facilities

Separation process facilities are typically massive aging structures with high contamination levels of Pu, U and various hazardous materials. Separation facilities, including DOE's nine "canyon" facilities and their associated processing cells, and the gaseous diffusion plants at Oak Ridge, Paducah and Portsmouth, represent the most complex facilities facing D&D. Removal and disposition of radioactive and special nuclear materials and equipment, deactivation of non-essential systems and utilities, and reconfiguration of systems to facilitate long-term S&M for these facilities using baseline technologies is very costly and poses high safety and health risks. Specific application sites are located at Idaho, Hanford, Oak Ridge and Savannah River.

##### DD02: D&D of Reactors and Fuel Storage Pools

Production Reactors and their associated Fuel Storage Basins are a significant part of the EM D&D mortgage. Hanford plans to place all of its remaining reactors into an interim safe storage mode for 75 years to allow radioactive decay. However, final disposition of the reactors is undetermined. Deactivation of Savannah River's production reactors is scheduled to begin in FY2007. As with Hanford, SRS has yet to determine the final end-states for these facilities. This work package will address current technical needs required to accelerate deactivation schedules at SRS, as well as Long-Term Stewardship needs associated with the safe and cost-effective S&M of these facilities until such time that final disposition occurs. Improved technologies developed and demonstrated within this work package will have direct application for the D&D of commercial nuclear reactors, as well as many research and test reactors located throughout the DOE complex and Universities. This work package will also address needs associated with DOE's spent nuclear fuel storage pool facilities. Currently there are 29 such facilities at seven different DOE sites, with more than 40 contaminated basins. The problems associated with fuel basin closure include water cleanup and treatment, concrete characterization and decontamination, determination that leakage has occurred, characterization and cleanup of associated water treatment and ventilation systems, and sludge characterization and treatment. Primary sites include RL (including the K-Basin), SRS (including RBOF), and ID.

##### DD05: Material Recycle & Release

Technologies to characterize, separate (contaminated and non-contaminated portions) and decontaminate materials (e.g., concrete and metal) for internal DOE recycle or free release will be demonstrated and deployed. This will result in substantial life-cycle cost savings. Without this effort, most of the materials generated during deactivation and decommissioning will be disposed of as low-level waste at typically high life-cycle cost. Impact: Most of the material will be disposed of in LLW disposal facilities at typically high life-cycle disposal costs. Little will be recycled and reused (i.e., waste containers from metal and road base material from concrete). It is likely that little or none will be decontaminated for free release even though release standards do exist for surface-contaminated material. Huge amounts of non-contaminated material will be

## Appendix C

### DDFA Work Package Summaries

disposed of as contaminated waste. Benefit: Improved technologies for rapid radioactive analysis and separation into contaminated and non-contaminated components will be demonstrated and deployed, so that substantial life-cycle cost savings will be realized. Additional disposal costs will be avoided through recycle/reuse of the radionuclide contaminated fraction (waste containers), and through decontamination for free release. Specific application sites are Oak Ridge, Paducah, Portsmouth, Rocky Flats, and Savannah River. Success Indicators: 8-12 deactivation and decommissioning technologies demonstrated with validated cost and technical performance; 5 deactivation and decommissioning technologies deployed; Life-cycle costs documented for radioactive material decontamination/free release vs. reuse as useful products for DOE; Avoided cost determined for disposal of all potential radioactive material as LLW.

#### DD12: D&D of Weapon Fabrication Facilities

Weapons fabrication and assembly facilities represent some of DOE's most contaminated facilities. They contain large amounts of surplus processing equipment including piping, ducts, tanks and glove boxes contaminated with highly fissile materials, and a wide variety of radioactive and hazardous contaminants. Many of these facilities are contaminated with tritium, which poses a unique challenge to D&D because of its high mobility and ability to volumetrically contaminate metal and concrete. Without improved technologies, DOE sites will be forced to adhere to the original technical baseline that will increase the risk to workers, increase the cost of D&D, and send significantly more waste to LLW waste sites. The primary focus of this work package is on EM's Closure Sites (RFETS, Mound, and Fernald), as well as plutonium manufacturing and fuel fabrication facilities such as those at Hanford, and Savannah River.

#### DD07: D&D of Hot Cell Facilities

Laboratory facilities including hot cells and glove boxes are typically contaminated with high levels of radioactivity and often require remote/robotic applications to reduce worker exposure risk. In addition, workspace is often confined, which also results in increased worker exposure. Robotic technologies for characterization, decontamination, dismantlement and waste packaging will be developed, demonstrated and deployed which will result in much lower costs and risks. Impact: Most DOE sites contain laboratory facilities with hot cells and glove boxes. Without this effort, baseline deactivation and decommissioning approaches will be followed at most DOE sites at typically very high cost and risk to workers. Benefit: Application of remotely-delivered D&D technologies for characterization, decontamination, dismantlement and waste packaging will result in much lower costs and risks. The opportunity for broad and repeated deployment of such improved technologies is great, given the large number of similar facilities in the DOE weapons complex. Specific application sites include Savannah River, INEEL, Sandia National Laboratory, General Atomics Hot Cell Facility (San Diego, California), General Electric (Vallecitos, California), and the Laboratory for Energy-related Health Research (LEHR). Success Indicators: 8-12 deactivation and decommissioning technologies demonstrated with validated cost and technical performance; 5 technologies deployed with average 25% cost savings.

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### DDFA Work Package Summaries

#### DD14: D&D of Storage & Treatment Facilities

DOE operates a number of facilities across the complex that temporarily manage, store and treat HLW materials. These materials and associated equipment will require remote systems for safe and cost-effective disposition. Additionally, until such time that these materials can be adequately treated and disposed of, there exists a need for monitoring and maintenance of the facilities such that they remain in safe operating conditions. Once waste materials are removed, these facilities will require deactivation and final disposition. The major sites addressed in this work package are West Valley, the Hanford WESF and SRS DWPF and Idaho's Waste Calcining Facility.

# **NEED/DDFA WORK PACKAGE ASSOCIATIONS**

## **APPENDIX D**

## Appendix D Need/DDFA Work Package Associations

**Please read footnote regarding shading in the Need ID column<sup>1</sup>**

### **DD02: D&D of Reactors and Fuel Storage Pools**

49 Technical & 2 Science Needs. 1 Technical Need rated “1” High Priority

Focus Area	Need ID	Need Title	Science Need	PtC Priority	Start Date	End Date
DDFA	CH-DD01-00	Reduce Emission Metal Cutting	N	2	2000	
DDFA	CH-DD01-99	Characterization for D&D of the Brookhaven Graphite Research Reactor	N	3	2000	2005
DDFA	CH-DD04-99	Improved Worker Protection Equipment	N	2	2000	
DDFA	CH-DD06-99	Size Reduction of Massive Metal Structures	N	2	2000	
DDFA	CH-DD07-99	Decontamination of Fixed Surface Contamination of Concrete (thin layer removal)	N	2	2000	
DDFA	ID-7.2.03	Decontamination of Concrete Walls, Floors, Ceilings, and Corners	N	2	2000	
DDFA	ID-7.2.06	Remote Characterization for Building Release, Large Area Surface Soil Characterization, and Characterization of Sumps, Debris, Underwater Areas, and Buried Pipes and Utilities	N	2	2002	
DDFA	ID-7.2.08	Robotics for D&D	N	2	2000	
DDFA	ID-7.2.09	Rapid Wood Radiological Contamination Monitor	N	2		
DDFA	ID-7.2.10	Treatment Technologies to Treat Reactor Canal (TRA-660) Water	N	2	2000	
DDFA	ID-7.2.11	Asbestos Wrapped/Insulated Pipe Removal and Packaging	N	2		
DDFA	ID-7.2.12	Cutting Equipment for Large Items in Above Ground or Underground Structures & Underwater	N	2		
DDFA	ID-7.2.13	Penetrations in Concrete Floor and Demolition of Concrete Roof	N	2		
DDFA	ID-7.2.15	Field Screening of Paint/Painted Surfaces to Identify Contamination such as; PCB, Lead, and other RCRA Metals in the Paint	N	2		
DDFA	ID-7.2.17	Field Screening of Samples and Equipment Surfaces to Identify PCB Contamination	N	2		
DDFA	ID-7.2.18	General Use Remote Tools for Handling Small Items (e.g., pliers) or for Hooking to Rigging	N	2	2000	
DDFA	ID-7.2.19	Remote/Robotic Technologies for Access and Deployment of Characterization & Sampling Tools	N	2	2000	
DDFA	ID-7.2.20	Quantitative Underwater Radionuclide Characterization of Structures, Equipment, and Contaminated Pool Walls	N	2		
DDFA	ID-7.2.21	Removal of Two Reactors as Single Unit	N	2		
DDFA	ID-7.2.24	Decontamination of Metal Debris	N	2	2000	
DDFA	ID-7.2.25	Decontamination of Metal Pipes	N	2	2000	
DDFA	ID-7.2.26	Decontamination of Metal Walls, Floors, Ceilings, and Corners	N	2	2000	
DDFA	ID-7.2.28	Remote Demolition of Concrete Structures	N	2	2002	
DDFA	ID-7.2.29	Remote Demolition of Machinery	N	2	2002	
DDFA	ID-7.2.30	Remote Demolition of Metal Structures	N	2	2002	
DDFA	ID-7.2.31	Remote Demolition of Piping	N	2	2002	
DDFA	ID-S.2.05	Understanding the Physics and Chemistry of Concrete Decontamination	Y	2	2000	
DDFA	ID-S.2.06	Understanding the Physics and Chemistry of Metal Decontamination	Y	2	2000	
DDFA	RL-DD033	Field Screening for Hazardous Materials for 105-F and 105-DR Reactors	N	2	1999	2004
DDFA	RL-DD064	Characterization of the 105-F Spent Fuel Basin	N	2	1999	
DDFA	RL-DD065	Backfill Removal and Segregation for the 105-F Spent Fuel Basin	N	2	1999	2004
DDFA	RL-DD066	Material Removal and Segregation for the 105-F Spent Fuel Basin	N	2	1999	2004

<sup>1</sup> The shading in the Need ID column indicates needs that are mapped to more than one DDFA work package. Because EM Headquarters guidance for the IPABS-IS (and Work Package Ranking System) required a technical response to be associated with only one (1) work package, the DDFA developed multiple technical responses for site D&D needs that address more than one facility type.

## Appendix D

### Need/DDFA Work Package Associations

Focus Area	Need ID	Need Title	Science Need	PtC Priority	Start Date	End Date
SNF	RL-SNF01	Contaminant Mapping of K-Basins	N	3	2004	2007
SNF	RL-SNF02	Decontamination of K-Basin Pool	N	2	2004	2007
SNF	RL-SNF03	Fixatives for K-Basin	N	3	2004	2007
SNF	RL-SNF05	Underwater Fuel Rack Cutting System	N	2	2001	2005
SNF	RL-SNF06	Sludge Treatment Process	N	1	2004	2005
DDFA	SR00-4001	Dismantlement of Large and/or Complex Equipment and Structures	N	3	2002	2006
DDFA	SR00-4002	Characterization of Contaminated Surfaces	N	3	2002	2003
DDFA	SR00-4004	Decontamination of Contaminated Concrete	N	3	2001	2007
DDFA	SR00-4005	Characterization of Inaccessible Areas	N	3	2000	2002
DDFA	SR00-4007	Characterization of Volumetrically Contaminated Surfaces	N	3	2001	2005
DDFA	SR00-4008	Dismantlement of Concrete-Encased Piping	N	3	2000	2004
DDFA	SR00-4009	Improved Exhaust Treatment Systems	N	3	2001	2005
DDFA	SR00-4010	Characterization Data Management	N	3	2000	2002
DDFA	SR00-4011	Waste Characterization	N	3	2003	2005
DDFA	SR00-4012	Stabilization of Contaminated Equipment/Components/Surfaces	N	3	2001	2003
DDFA	SR00-4013	Containment/Confinement Technologies	N	3	2001	2007
DDFA	SR00-4014	Basin Cleanup Technology	N	3	2000	2002
DDFA	SR00-4015	Decontamination of Small Components	N	3	2000	2002
DDFA	SR00-4016	Health and Safety Technologies	N	3	2000	2002

## Appendix D

### Need/DDFA Work Package Associations

#### DD05: Material Recycle & Release

22 Technical & 2 Science Needs. 3 Technical Needs rated “1” High Priority

Focus Area	Need ID	Need Title	Science Need	PtC Priority	Start Date	End Date
DDFA	AL-00-01-10-DD	Accelerated 'Real Time' Volumetric Radioassay of Lead Forms	N	2	2000	2006
DDFA	AL-09-01-13-DD	On-Site Quantitation of Plutonium and Americium in Soil and Concrete Rubble from D&D Projects	N	2	2000	2005
DDFA	AL-09-01-15-DD	Disposal & Recycle Technologies for Scrap Uranium Chips and Turnings	N	2	2000	
MWFA	CH-MW03-99	Lead Removal, Segregation and Disposal	N	2	2000	
DDFA	ID-7.2.14	Technology for Decontamination of Radionuclide Contaminated Lead Shot, Brick (including lead plate), and Sheeting for Free Release	N	2		
DDFA	ID-7.2.16	Field Screening of Lead (shot, bricks, sheeting) for Radionuclide Contamination	N	2		
DDFA	ID-7.2.22	Concrete and Asphalt Recycle	N	2	2002	
DDFA	ID-7.2.23	Copper Wire Recycle	N	2	2001	
DDFA	ID-7.2.27	Reuse of Metal Pipes, Lumber, Lead, and Other Metals	N	2	2002	
DDFA	ID-S.2.05	Understanding the Physics and Chemistry of Concrete Decontamination	Y	2	2000	
DDFA	ID-S.2.06	Understanding the Physics and Chemistry of Metal Decontamination	Y	2	2000	
DDFA	OH-F047	Pulverizing Concrete for Site Aggregate Needs	N	2	2000	2006
DDFA	ORDD-01	Improved Characterization of Equipment, Machinery, Fabricated Metals & Other Materials	N	1	2000	2004
DDFA	ORDD-02	Improved Decontamination of Equipment, Machinery, Fabricated Metals & Other Materials	N	2	2000	2004
DDFA	ORDD-12	Improved Characterization of Buildings and Facilities	N	1	2001	2004
DDFA	RF-DD04	Improved Measurement Techniques for Free Release of Property and Salvageable Equipment Contaminated with Radionuclides	N	2	2000	2006
DDFA	RF-DD09	Improved Decontamination of Porous Surfaces in Preparation for Building Demolition	N	2	2000	2006
DDFA	RF-DD10	Improve Decontamination of Non-Porous Building Property and Structures	N	2	2000	2006
DDFA	RF-DD21	Removal of Pb Shielding from Gloveboxes and other Process Equipment	N	1	2000	2006
DDFA	RL-DD021	Metal Decontamination and Recycling for the D&D Program	N	2	1999	
DDFA	RL-DD059	Lead Decontamination for the S&M Program	N	3	1999	
DDFA	SR00-4003	Material Recycle (Process Equipment, Metal, Steel, and Concrete)	N	3	2002	2006
DDFA	SR00-4004	Decontamination of Contaminated Concrete	N	3	2001	2007
DDFA	SR00-4006	Asbestos Treatment to Allow Reuse	N	3	2001	2003

## Appendix D

### Need/DDFA Work Package Associations

#### DD08: D&D of Processing Facilities

58 Technical & 2 Science Needs. 6 Technical & 1 Science Needs rated “1” High Priority

Focus Area	Need ID	Need Title	Science Need	PtC Priority	Start Date	End Date
DDFA	ID-7.2.03	Decontamination of Concrete Walls, Floors, Ceilings, and Corners	N	2	2000	
DDFA	ID-7.2.08	Robotics for D&D	N	2	2000	
DDFA	ID-7.2.09	Rapid Wood Radiological Contamination Monitor	N	2		
DDFA	ID-7.2.11	Asbestos Wrapped/Insulated Pipe Removal and Packaging	N	2		
DDFA	ID-7.2.13	Penetrations in Concrete Floor and Demolition of Concrete Roof	N	2		
DDFA	ID-7.2.15	Field Screening of Paint/Painted Surfaces to Identify Contamination such as; PCB, Lead, and other RCRA Metals in the Paint	N	2		
DDFA	ID-7.2.17	Field Screening of Samples and Equipment Surfaces to Identify PCB Contamination	N	2		
DDFA	ID-7.2.18	General Use Remote Tools for Handling Small Items (e.g., pliers) or for Hooking to Rigging	N	2	2000	
DDFA	ID-7.2.19	Remote/Robotic Technologies for Access and Deployment of Characterization & Sampling Tools	N	2	2000	
DDFA	ID-7.2.24	Decontamination of Metal Debris	N	2	2000	
DDFA	ID-7.2.25	Decontamination of Metal Pipes	N	2	2000	
DDFA	ID-7.2.26	Decontamination of Metal Walls, Floors, Ceilings, and Corners	N	2	2000	
DDFA	ID-7.2.28	Remote Demolition of Concrete Structures	N	2	2002	
DDFA	ID-7.2.29	Remote Demolition of Machinery	N	2	2002	
DDFA	ID-7.2.30	Remote Demolition of Metal Structures	N	2	2002	
DDFA	ID-7.2.31	Remote Demolition of Piping	N	2	2002	
DDFA	ORDD-03	Improved Decontamination of Facility Concrete and Painted Surfaces	N	2	2001	
DDFA	ORDD-08	Mercury Removal from Metal and Porous Surfaces	N	3	2000	
DDFA	ORDD-09	Improved Non-Thermal Cutting of Process Equipment	N	2	2000	2004
DDFA	RL-DD022-S	Photon-Assisted Decontamination Chemistry	Y	2		
DDFA	RL-DD026-S	Contaminant Binding Science Need	Y	1		
DDFA	RL-DD029	Critically Safe Vacuum System for 233-S	N	1	1999	
DDFA	RL-DD030	Cutting Plutonium Contaminated Pipe for 233-S	N	2	1999	
DDFA	RL-DD031	Non-Intrusive Detection of Pipe Contents for 233-S	N	2	1999	
DDFA	RL-DD032	Contamination Fixative for 233-S	N	2	1999	
DDFA	RL-DD034	Remote/Robotic Technologies for Access and Deployment of Characterization and Sampling Tools for CDI	N	1	1999	2000
DDFA	RL-DD035	Visual/Spatial Imaging of the 221-U Facility and Equipment for CDI	N	2	1999	2000
DDFA	RL-DD036	General Radiation Surveys of Concrete and Equipment in the Materials Processing Facilities for CDI	N	2	1999	
DDFA	RL-DD037	Detection of Free Standing Liquid in Equipment (e.g., tanks) and Piping for CDI	N	1	1999	
DDFA	RL-DD038	Characterization of Liquids in Equipment (e.g., tanks) and Piping for CDI	N	2	1999	
DDFA	RL-DD039	Characterization of Solids (Sediment/Sludge/Dust) on Floors and Walls, and in Equipment in the Materials Processing Facilities for CDI	N	2	1999	
DDFA	RL-DD040	Characterization of Concrete Floors and Walls in the Materials Processing Facilities for CDI	N	2	1999	
DDFA	RL-DD048	Volume Reduction of Equipment for CDI	N	2	2001	
DDFA	RL-DD049	Waste Encapsulation and Stabilization for CDI	N	2	2001	
DDFA	RL-DD050	Sealant Technologies for CDI	N	1	2001	
DDFA	RL-DD051	High Profile Surface Barrier for CDI	N	1	2006	
DDFA	RL-DD052	Long-term Monitoring for CDI	N	2	2001	
DDFA	RL-DD053	Operational Modeling for CDI	N	3	2001	



## Appendix D

### Need/DDFA Work Package Associations

Focus Area	Need ID	Need Title	Science Need	PtC Priority	Start Date	End Date
DDFA	RL-DD054	Electronic Job Control System for the S&M Program	N	3	1999	
DDFA	RL-DD055	Remote Monitoring System Upgrades for the S&M Program	N	3	1999	
DDFA	RL-DD056	Facility Life Model for S&M Program	N	2	1999	
DDFA	RL-DD057	Long-Lived Roof for PUREX	N	2	2002	
DDFA	RL-DD058	Method to Control Deep Rooted Plants for the S&M Program	N	3	1999	
DDFA	RL-DD060	Characterization for Waste Handling, Packaging and Processing for 233-S	N	2	1999	2001
DDFA	RL-DD061	Remote/Robotic Systems for 233-S	N	1	1999	2001
DDFA	RL-DD062	Method to Capture Airborne Alpha Contamination for 233-S	N	2	1999	2001
DDFA	RL-DD063	Decontamination of Transuranic Debris for 233-S	N	2	1999	2001
DDFA	SR00-4001	Dismantlement of Large and/or Complex Equipment and Structures	N	3	2002	2006
DDFA	SR00-4002	Characterization of Contaminated Surfaces	N	3	2002	2003
DDFA	SR00-4004	Decontamination of Contaminated Concrete	N	3	2001	2007
DDFA	SR00-4005	Characterization of Inaccessible Areas	N	3	2000	2002
DDFA	SR00-4007	Characterization of Volumetrically Contaminated Surfaces	N	3	2001	2005
DDFA	SR00-4008	Dismantlement of Concrete-Encased Piping	N	3	2000	2004
DDFA	SR00-4009	Improved Exhaust Treatment Systems	N	3	2001	2005
DDFA	SR00-4010	Characterization Data Management	N	3	2000	2002
DDFA	SR00-4011	Waste Characterization	N	3	2003	2005
DDFA	SR00-4012	Stabilization of Contaminated Equipment/Components/Surfaces	N	3	2001	2003
DDFA	SR00-4013	Containment/Confinement Technologies	N	3	2001	2007
DDFA	SR00-4015	Decontamination of Small Components	N	3	2000	2002
DDFA	SR00-4016	Health and Safety Technologies	N	3	2000	2002

## Appendix D

### Need/DDFA Work Package Associations

#### DD14: D&D of Storage & Treatment Facilities

16 Technical & 3 Science Needs. 4 Technical & 2 Science Needs rated “1” High Priority

Focus Area	Need ID	Need Title	Science Need	PtC Priority	Start Date	End Date
DDFA	OH-WV-902	Decontamination of HLW Canisters	N	1	2002	
DDFA	OH-WV-903	Vitrification Expended Material Processing	N	1	2000	
TFA	OH-WV-908	Decontamination of HLW Contaminated Equipment	N	3	2000	
DDFA	OH-WV-909	Remote Handled Waste Processing	N	1	2001	
DDFA	OH-WV-910	Size Reduction of Components	N	3	2000	
DDFA	OH-WV-913	Far-Field Radioactivity Measurement	N	2	2000	
NMFA	RL-DD01	Cesium/Strontium Capsule Leak Detection System for WESF	N	2	1999	2020
DDFA	RL-DD023-S	Cesium Source Identification	Y	1		
DDFA	RL-DD027-S	Cesium Integrity Assessment	Y	2		
DDFA	RL-DD029-S	Algae Corrosion and Growth Inhibition	Y	1		
NMFA	RL-DD041	Capsule Integrity Assessment Method for WESF	N	2	1999	2017
DDFA	RL-DD044	Cesium and Strontium Inventory Removal From K3 Duct at WESF	N	2	1999	2017
DDFA	RL-DD045	Fixatives for K3 Duct at WESF	N	3	1999	2017
MWFA	RL-MW02	Remotely Controlled Size and Volume Reduction Techniques for RH MLLW and RH TRUW	N	1	2002	
MWFA	RL-MW04	Remote Decontamination of RH-TRUW Debris to Support Reclassification into Non-TRU Category	N	2	2000	
DDFA	SR00-1014	Cleaning of Alpha Contaminated Launderables	N	2	2001	
TFA	SR00-2029	Alternate DWPF Canister Decon Technology	N	3	2006	
TFA	SR00-2031	Develop Remote Technology to Improve DWPF Operations	N	3	2002	
TFA	SR00-2040	Demonstrate Remote Decommissioning and Disassembly of High Level Waste Processing Equipment	N	3	2002	

## Appendix D Need/DDFA Work Package Associations

### DD12: D&D of Weapon Fabrication Facilities

56 Technical & 8 Science Needs. 16 Technical & 5 Science Needs rated “1” High Priority

Focus Area	Need ID	Need Title	Science Need	PtC Priority	Start Date	End Date
DDFA	AL-00-01-01-DD	Size Reduction Technology for TRU Mixed Waste	N	1	2000	2015
DDFA	AL-00-01-06-DD	Effective Decontamination of Concrete	N	2	2000	2006
DDFA	AL-00-01-07-DD	Ex Situ Glove Box Size Reduction System	N	2	2000	2006
DDFA	AL-00-01-08-DD	Segregation Technology to Separate TRU and Non-TRU and Low Level and Free Release Waste	N	2	2000	2006
DDFA	AL-00-01-09-DD	Method for Decontaminating and Disposing of Tritium-Contaminated Pump Oil	N	1	2000	2006
DDFA	AL-00-01-11-DD	Increased Efficiency Waste Characterization Assay Methods	N	2	2000	2006
DDFA	AL-00-01-12-DD	Remote-Handled Size Reduction Technology	N	2	2000	2006
MWFA	AL-07-01-11-MW	Waste Sorting and Characterization	N	3	2000	2005
MWFA	AL-07-01-14-MW	Characterization of TRU Waste Now Stored in Fiberglass Reinforced Plywood Boxes LANL	N	2	1999	2000
MWFA	AL-08-01-17-MW	Certifiability of Newly Generated TRU Waste	N	3	2000	2006
MWFA	AL-09-01-06-MW	Mobile Neutron Assay System (Mn/aS) for SWBs	N	3	2000	2001
DDFA	AL-09-01-11-MW	Characterization of Equipment Potentially Contaminated with Alpha Emitting Transuranic (TRU) Radionuclides	N	3	2000	
DDFA	AL-09-01-12-DD	Decontamination and Volume Reduction of TRU and LLW Metals	N	1	2000	
DDFA	AL-09-01-14-DD	Quantitation of Tritium in Concrete Rubble from D&D Projects	N	2	2000	2005
DDFA	CH-DD09-99	Tritium Removal by Laser Heating	N	2	2000	
MWFA	CH-MW07-99	Stabilization of Tritium Organic Waste	N	3	2000	
DDFA	CH-SS01-00	Detritiation of Water	N	2	2000	
DDFA	NV07-0001-03	Oversize TRU Waste Size Reduction	N	2	2000	2003
DDFA	NV09-0001-09	Nonintrusive Surveys in Pipes and Vessels	N	3	2002	2007
DDFA	NV10-0001-10	Improved Detection & Characterization of Large Metal & Concrete Surfaces	N	3	2002	2006
DDFA	OH-F010	Safe and Efficient Process Piping and Conduit Dismantlement	N	2	2000	2006
DDFA	OH-F027	Improved Equipment Dismantlement	N	2	2000	2006
DDFA	OH-F042	Telemetric Monitoring of Heat Stress	N	2	2000	2006
DDFA	OH-M010	Tritium Robotics	N	2	2000	
DDFA	OH-M011	Tritides Air Monitor	N	1	1999	2000
DDFA	OH-M901	Improved Facility Survey Techniques	N	1	2000	
DDFA	OH-M902	Decontamination Techniques for Tritiated Gloveboxes	N	2	2000	
DDFA	OH-M903	Method for Controlling Off-Gassing and Removable Contamination from Tritium Piping	N	2	2000	
DDFA	OH-M905	Treatment of Tritiated Pump Oils and Mercury	N	1	2000	
DDFA	OH-M909	Automated Dust Suppression System	N	3	2000	
MWFA	OH-WV-901	Characterization of Low Level and Transuranic Waste	N	2	2000	
MWFA	OK99-06	Mobile Non-Destructive Assay for TRU Waste Boxes	N	1	1999	
DDFA	ORDD-01	Improved Characterization of Equipment, Machinery, Fabricated Metals & Other Materials	N	1	2000	2004
DDFA	ORDD-02	Improved Decontamination of Equipment, Machinery, Fabricated Metals & Other Materials	N	2	2000	2004
DDFA	ORDD-03	Improved Decontamination of Facility Concrete and Painted Surfaces	N	2	2001	
DDFA	ORDD-09	Improved Non-Thermal Cutting of Process Equipment	N	2	2000	2004
DDFA	ORDD-12	Improved Characterization of Buildings and Facilities	N	1	2001	2004

## Appendix D

### Need/DDFA Work Package Associations

Focus Area	Need ID	Need Title	Science Need	PtC Priority	Start Date	End Date
DDFA	RF-DD01	Improved Decommissioning Characterization for Distinguishing Between TRU and Low-Level Contamination	N	2	2000	2006
DDFA	RF-DD02	High Speed Integrated Characterization System for (1) Radioactive, (2) Hazardous and (3) Toxic Contamination	N	2	2000	2006
DDFA	RF-DD03	Improved Interior Airborne Particulates Control	N	2	2000	2006
DDFA	RF-DD04	Improved Measurement Techniques for Free Release of Property and Salvageable Equipment Contaminated with Radionuclides	N	2	2000	2006
DDFA	RF-DD07	Improved Disposition of Raschig Ring Tanks	N	2	2000	
DDFA	RF-DD08	Improved Worker Protection Clothing and Systems	N	2	2000	2006
DDFA	RF-DD09	Improved Decontamination of Porous Surfaces in Preparation for Building Demolition	N	2	2000	2006
DDFA	RF-DD10	Improve Decontamination of Non-Porous Building Property and Structures	N	2	2000	2006
DDFA	RF-DD11	Improved Size Reduction of Contaminated Equipment and Demolition Waste	N	2	2000	2006
DDFA	RF-DD15	Real-Time Beryllium Surface Characterization	N	2	2000	2006
DDFA	RF-DD16	Real-Time Beryllium Air Monitoring	N	2	2000	2006
DDFA	RF-DD17	Improved Dust Control Methods During Building Demolition for Structures that are not Free Releasable	N	1	2000	2006
DDFA	RF-DD18	Real-Time Radiation Air Monitoring During Building Demolition	N	1	2000	2006
DDFA	RF-DD20	Removal of Large Contaminated Equipment that is Entombed in Concrete	N	1	2001	2004
DDFA	RF-DD21	Removal of Pb Shielding from Gloveboxes and other Process Equipment	N	1	2000	2006
DDFA	RL-DD02	Glove Box Volume Size Reduction System for PFP	N	1	2002	2014
DDFA	RL-DD022-S	Photon-Assisted Decontamination Chemistry	Y	2		
DDFA	RL-DD025-S	Effluent Capture	Y	1		
DDFA	RL-DD026-S	Contaminant Binding Science Need	Y	1		
DDFA	RL-DD03	Terminal Clean-out and TRU Waste Decontamination of PFP	N	1	2002	2014
DDFA	RL-DD030-S	Polystyrene Cube Analysis for the Plutonium Finishing Plant (PFP)	Y	1		
DDFA	RL-DD031-S	Polystyrene Off-Gas Analysis for the Plutonium Finishing Plant (PFP)	Y	1		
DDFA	RL-DD032-S	Measurement of Moisture Content in Plutonium Oxides and other Materials for the Plutonium Finishing Plant (PFP)	Y	2		
DDFA	RL-DD034-S	Thermodynamic Data for Plutonium Nitrate	Y	1	2000	
DDFA	RL-DD036-S	Modeling Thermodynamic Properties	Y	2	2000	
DDFA	RL-DD04	TRU Waste Fixatives for PFP	N	1	2002	2014
DDFA	SR00-4007	Characterization of Volumetrically Contaminated Surfaces	N	3	2001	2005

## Appendix D

### Need/DDFA Work Package Associations

#### DD07: D&D of Hot Cell Facilities

27 Technical & 7 Science Needs. 5 Technical & 6 Science Needs rated “1” High Priority

Focus Area	Need ID	Need Title	Science Need	PtC Priority	Start Date	End Date
DDFA	AL-00-01-02-DD	Characterization Technologies for Verifying Presence or Absence of Contamination in Structures scheduled for D&D	N	2	2000	2006
DDFA	AL-00-01-03-DD	Containment and Confinement of Hazardous and Radioactively Contaminated Liquids Cost-Effectively; Containment of Airborne Contamination	N	1	2000	2006
DDFA	AL-00-01-04-DD	Fixation of Airborne and Removable Contamination	N	1	2000	2006
DDFA	AL-00-01-05-DD	Alternative Cutting Techniques for Piping	N	2	2000	2006
DDFA	AL-07-01-12-DD	Decontaminate and Decommission Radioactively Contaminated Facilities	N	2	2000	2005
DDFA	AL-07-01-13-DD	Decontamination of Difficult Access Interior Contamination	N	2	2000	2004
DDFA	AL-09-01-02-DD-S	Radiological Air Monitoring Needs for Current D&D/ER Operations	Y	1	2000	2000
DDFA	AL-09-01-04-DD-S	Methodology for Effective D&D of Large Environmental Sites	Y	1	2000	2004
DDFA	CH-DD08-99	Remote Decontamination of In-ground Concrete Structures	N	2	2002	
DDFA	CH-DD11-99	Remote Characterization of In-ground Concrete Structures	N	2	2001	2002
DDFA	OH-C002	Decontamination of Mop Heads and Rags to Reduce TRU Waste Volume and Minimize Radioactive Waste	N	3	2000	2004
DDFA	OH-C901	Robotic Device to Improve Characterization of Underground Pipe Lines	N	2	1999	2003
DDFA	OK99-23	Field Surveillance Device for Detection of Radium-226	N	1	2000	2000
DDFA	ORDD-01	Improved Characterization of Equipment, Machinery, Fabricated Metals & Other Materials	N	1	2000	2004
DDFA	ORDD-02	Improved Decontamination of Equipment, Machinery, Fabricated Metals & Other Materials	N	2	2000	2004
DDFA	ORDD-03	Improved Decontamination of Facility Concrete and Painted Surfaces	N	2	2001	
DDFA	ORDD-06	Improved Remote Decontamination Methods	N	3	2001	
DDFA	ORDD-07	Remote Dismantlement Methods	N	3	2001	
DDFA	ORDD-09	Improved Non-Thermal Cutting of Process Equipment	N	2	2000	2004
DDFA	ORDD-12	Improved Characterization of Buildings and Facilities	N	1	2001	2004
DDFA	RL-DD010	Radiation Hardened Robotics for Building 324	N	2	2000	
DDFA	RL-DD011	Structural Integrity Inspection Technologies - 324/327 Buildings Hot Cell Liners	N	2	2000	2001
DDFA	RL-DD022-S	Photon-Assisted Decontamination Chemistry	Y	2		
DDFA	RL-DD025-S	Effluent Capture	Y	1		
DDFA	RL-DD026-S	Contaminant Binding Science Need	Y	1		
DDFA	RL-DD033-S	Model for 324 Building Waste	Y	1	1999	
DDFA	RL-DD035-S	Neutron Detection for Sorting Remote-handled Radioactive Waste into TRU vs Non-TRU	Y	1	1999	
DDFA	RL-DD046	Clean-Out of Isolated Piping Systems in Building 324	N	2	2001	2003
DDFA	RL-DD047	Remote Viewing for Hot Cells in Buildings 324 and 327	N	2	2000	2001
DDFA	RL-DD05	Characterization of Building 324 and 327	N	2	2000	2007
DDFA	RL-DD06	Decontamination of Building 324 and 327	N	2	2000	2001
DDFA	RL-DD07	Fixatives for Building 324 and 327	N	2	2003	2007
DDFA	RL-DD08	Remote Cutting Technologies for Building 324 and 327	N	2	2000	2002
DDFA	RL-DD09	Tank Remediation for Building 324	N	2	2000	2007

**ACCEPTED OST TECHNOLOGIES**

**APPENDIX E**

**Appendix E**  
**Accepted OST Technologies**

<b>Title</b>	2-D Linear Motion System (Wall Walker)
<b>Technology ID</b>	1476
<b>Description</b>	Two dimensional linear motion systems used to semi-robotically operate tools or instruments on surfaces. System is suitable for high flat (or slightly curved) walls. The motor-driven pulleys can be attached to the wall temporarily with magnetic force for steel walls, or with anchors or vacuum force for concrete walls. For locations with no ceiling in the way, the pulleys can be attached to standoffs above the wall, thereby allowing the end effector to reach the full height of the wall. Similarly, if there are no sidewall restrictions, the standoffs can be positioned to allow reaching the full wall width. The operator can command the system to traverse any two-dimensional path at constant speeds up to 60 feet per minute.
<b>Point of Contact</b>	Lefkowitz, Sheldon
<b>Role</b>	Vendor
<b>Affiliation</b>	Pentek, Inc.
<b>Phone</b>	412-262-0725

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<b>Title</b>	3-D Visual and Gamma Ray Imaging System (Gamma Modeler)
<b>Technology ID</b>	2402
<b>Description</b>	The 3-D Visual and Gamma Ray Imaging System can remotely survey large areas and individual objects for gamma-ray emissions and display the results as a combined 3-D representation of radiation source locations and "30-cm" dose estimates of the equipment or object.
<b>Point of Contact</b>	Henneborn, Al
<b>Role</b>	
<b>Affiliation</b>	AIL Systems
<b>Phone</b>	516-595-5595

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<b>Title</b>	Advanced Recyclable Media System
<b>Technology ID</b>	1971
<b>Description</b>	An open blast technology which uses a soft recyclable media consisting of a urethane foam matrix which can be manufactured in various grades of abrasiveness. The fiber media can be remade and/or reused up to 20 times and can clean almost any surface (wood, metal, or lead) and geometry including corners and the inside of air ducts. ARMS is divided into three units: the media feed unit, the sifter unit, and the media remake unit. The media is propelled from the feed unit toward the surface to be cleaned by a portable blast unit. The used media is then manually collected and placed into the sifter unit. Large debris (>1/4-in) and small fines (<1/16-in) are discarded as waste, and the remaining media can be used for media remake or can be fed back into the feed unit for recycling.
<b>Point of Contact</b>	Pocock, Steven M.

**Appendix E**  
**Accepted OST Technologies**

<b>Role</b>	Vendor
<b>Affiliation</b>	Surface Technology Systems, Inc.
<b>Phone</b>	330-497-5905

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<b>Title</b>	Advanced Worker Protection System
<b>Technology ID</b>	75
<b>Description</b>	The Advanced Worker Protection System (AWPS) is a liquid-air-based, self-contained breathing and cooling system with a duration of 2 hr. The heart of the system is the life-support backpack that uses liquid air to provide cooling as well as breathing gas to the worker. The backpack is combined with advanced protective garments, an advanced liquid cooling garment (LCG), a respirator, and communications and support equipment.
<b>Point of Contact</b>	Caldwell, Bruce
<b>Role</b>	Vendor
<b>Affiliation</b>	Oceaneering Space Systems, Inc.
<b>Phone</b>	281-448-3440

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<b>Title</b>	AeroGo Air Lift Pallet System
<b>Technology ID</b>	2396
<b>Description</b>	The AeroGo Airlift Pallet System includes air casters, an air hose, and a pressure manifold distribution control box to 'float' loads on a virtually frictionless film of air. The reduced friction and omni-directional movement allow the operator to precisely place and align the load in a limited workspace. The low profile of the Aero-Caster Load Module requires less than 3-in of clearance for positioning. Lifting capacity is dependent upon the design and air pressure can range from a few hundred pounds to hundreds of tons. Once loads are elevated, only moderate force is needed to maneuver and position a load. Loads can be accurately positioned as needed for non-destructive assay analysis or for dismantlement.
<b>Point of Contact</b>	
<b>Role</b>	
<b>Affiliation</b>	
<b>Phone</b>	

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<b>Title</b>	ALARA 1146 Strippable Coating
<b>Technology ID</b>	2314
<b>Description</b>	The process applies a plastic membrane or polymer on the contaminated surface. The strippable coating is allowed to cure for up to 24 hours, after which it can be easily peeled or stripped off the surface. The coating traps the contaminants in the polymer matrix.



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**Point of Contact** McNamara, T. J.  
**Role** non Vendor  
**Affiliation** Williams Power Corp.  
**Phone** 410-620-3373

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**Title** Asbestos Pipe-Insulation Removal System  
**Technology ID** 148  
**Description** Mechanical, asbestos-removal system that can be remotely operated without a containment area. The BOA technology consists of a pipe-crawler removal head and a boom vehicle system with dual robots. BOA's removal head can be remotely placed on the outside of the pipe and can crawl along the pipe, removing lagging and insulation. The lagging and insulation is cut using a hybrid endmill water-jet cutter and then diced into 2-inch cube sections of ACM. These ACM sections are then removed from the pipe using a set of blasting fan- spray nozzles, vacuumed off through a vacuum hose, and bagged. The vacuum and entrapment air flow ensures that the system can operate without a containment area while meeting local and federal standards for fiber count.

**Point of Contact** Schempff, Hagen  
**Role** Vendor  
**Affiliation** Automatica  
**Phone** 412-268-6884

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**Title** Associated Particle Imaging Development  
**Technology ID** 413  
**Description** An active, non-intrusive, single-sided, fast-neutron-based interrogation system that can examine contaminated surfaces, display the locations, shapes, and sizes of their contents in three-dimensional image format, and identify their elemental compositions. A Sealed Tube Neutron Generator (STNG) produces 14 MeV neutrons. The neutrons leave the collision site in a direction antiparallel to the particles. The particle hits a two-dimensional position-sensitive detector and starts the clock. At the same time, the neutron heads off toward the region to be interrogated. If the neutron interacts with target material in the interrogation region, and if a gamma ray is produced and subsequently detected within a preset period of time, then the clock is stopped upon detection of the gamma ray. The particle's location on the two-dimensional detector gives the neutron direction of flight. The elapsed time between clock 'start' and 'stop' provides information that tells how far the neutron travelled before hitting the target. These pieces of information ultimately give the x,y,z location of the neutron-target interaction. Furthermore, the energy of the gamma ray is characteristic of the material that was hit. Thus, the gamma spectrum allows one to identify the elemental composition of the material in the target region as a function of position.

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<b>Point of Contact</b>	Schmidhofer, Dirk
<b>Role</b>	DOE EM-50 Program Manager
<b>Affiliation</b>	DOE Nevada
<b>Phone</b>	702-295-0159

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<b>Title</b>	Beryllium Air Monitor
<b>Technology ID</b>	2914
<b>Description</b>	The purpose of this project is to develop a real-time (or near real-time) monitor for airborne Beryllium. This project will be selected under a request for proposals (RFP) issued by NETL and managed by CMST. The current anticipated approach will investigate the development of a reliable Laser-Induced Breakdown Spectroscopy (LIBS) measurement technology for quantitative analysis of Beryllium aerosols on a filter substrate in the presence of common workplace dusts, mists, and fumes generated during D&D activities. This technology is targeted toward Rocky Flats need# RF-DD16 for use in area and personnel monitors.

<b>Point of Contact</b>
<b>Role</b>
<b>Affiliation</b>
<b>Phone</b>

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<b>Title</b>	Beryllium Swipe Monitor
<b>Technology ID</b>	2915
<b>Description</b>	The purpose of this project is to develop a real-time (or near real-time) monitor for surfaces contaminated with Beryllium. This project will be selected under a request for proposals (RFP) issued by NETL and managed by CMST. The current anticipated approach will investigate the development of a reliable Laser-Induced Breakdown Spectroscopy (LIBS) measurement technology for quantitative analysis of Beryllium on a wide variety of surfaces and substrates. The first step toward accomplishing this objective will be to develop a working understanding of the effect that various parameters have on the LIBS beryllium signal. these parameters will include total beryllium concentration, particle size and size distribution, and particle depth in the substrate. This technology is targeted toward Rocky Flats need# RF-DD15 for use surface monitors for beryllium.

<b>Point of Contact</b>
<b>Role</b>
<b>Affiliation</b>
<b>Phone</b>

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<b>Title</b>	BetaScint Fiber-Optic Sensor for Detecting Strontium-90 and Uranium-238 in Soil
<b>Technology ID</b>	70
<b>Description</b>	The technology uses multiple layers of fiber-optic detectors and coincidence techniques to be specific for high energy beta particles (the only radiation emitted by Sr-90) and insensitive to gammas and alphas. The BetaScint™ sensor works as follows: 1. Beta particles (electrons) emitted by radioactive soil contaminants excite electrons in plastic fiber doped with fluorescent compounds in the layers of the sensor. 2. The plastic fibers give off light (scintillate) when the fluorescent molecules lose energy and return to their ground state. 3. Scintillations in the plastic fibers are counted by photodetectors to determine beta radioactivity of the soil sample. BetaScint™ sample processing for this application is limited to drying and sieving soil samples to remove rocks and excessive organic matter. The BetaScint™ system is easy to operate, and does not create secondary wastes.
<b>Point of Contact</b>	Schlik, Alan
<b>Role</b>	Vendor
<b>Affiliation</b>	Beta-Scint
<b>Phone</b>	509-783-4338

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<b>Title</b>	Biodegradation of Concrete
<b>Technology ID</b>	1421
<b>Description</b>	Microbiological process used for the decontamination of large concrete surfaces.
<b>Point of Contact</b>	Hamilton, Melinda
<b>Role</b>	PI
<b>Affiliation</b>	Lockheed Martin
<b>Phone</b>	208-526-0948

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<b>Title</b>	BNL ASTD: Deployment of Innovative Characterization Technologies and Implementation of the MARSSIM Process at Radiologically Contaminated Sites
<b>Technology ID</b>	2374
<b>Description</b>	Characterization of the Brookhaven Graphite Research Reactor (BGRR), using Canberra's In-Situ Object Counting System (ISOCS TMS# 2098), coupled with a characterization plan developed in accordance with the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) has substantial advantage over conventional approaches for radiological characterization of contaminated facilities. ISOCS can non-intrusively analyze materials for radiological contamination, and implementation of MARSSIM yields a statistically-defensible characterization plan that has

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fewer sampling locations. This approach saves time and money and reduces exposure of workers to radiation.

**Point of Contact** Kalb, Paul  
**Role** Vendor  
**Affiliation** Brookhaven National Laboratory (BNL)  
**Phone** 516-344-7644

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**Title** CDI Remote Characterization System  
**Technology ID** 2178  
**Description** A fully remote platform (vehicle) for deployment in areas where personnel are prohibited access such as high radiation areas. It carries characterization sensors such as gamma detectors, and video, and has the capability to take smear samples. Andros Mark VI robot, crane-deployable drive on/drive off deployment platform with motorized cable payout and retrieve system, gross gamma detector, 3 video cameras, lights, 6-DOF arm. Capable of operating off of 110 VAC, RF, or battery. Standard communications umbilical or fiber optic.

**Point of Contact** Haley, Dennis C.  
**Role** D&D Robotics Coordinator  
**Affiliation** ORNL  
**Phone** 865-576-4388

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**Title** Centrifugal Shot Blast System  
**Technology ID** 1851  
**Description** Centrifugal Shot Blasting is an abrasive blasting technology that propels hardened steel shot at a rate of speed high enough to remove concrete and concrete coatings from floors. The depth of removal is determined by the rate of speed at which the machine is traveling and the volume and size of shot used. The steel shot is recycled and reused until it is too small to be useable. The system can incorporate a vacuum unit and a high-efficiency particulate air (HEPA) dust collection and filter system.

**Point of Contact** Connacher, Mike  
**Role** Vendor  
**Affiliation** Surface Remediation Specialists  
**Phone** 509-226-0315

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**Title** Cogema 3-D Gamma Imaging  
**Technology ID** 2302  
**Description** Three-dimensional gamma imaging system that provides precise information on the quantity and location of gamma radiation emitting sources. A three-

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dimensional model superimposed with gamma images can be developed by obtaining sufficient gamma images and corresponding visual images and then applying photogrammetric analysis. Gamma images are obtained using an ALADIN camera system. Visual images are obtained with video camera systems. The video images are integrated with the gamma images in producing two-dimensional images that can be used to develop three-dimensional models of the gamma distribution.

**Point of Contact** Hamilton, Dennis  
**Role** non Vendor  
**Affiliation** Cogema Engineering  
**Phone** 509-372-1130

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**Title** Coherent Laser Vision System  
**Technology ID** 94  
**Description** The sensor provides timely, accurate, and reliable three-dimensional position and orientation data in a dynamic environment. The Coherent Laser Vision System (CLVS) is a lightweight, compact, robust sensor that provides scanned images of 256 by 256 pixels at a rate of 1 frame per second. The radar uses the relatively large tuning range of injector laser diodes to achieve greater precision than available with other techniques. An eye-safe laser source is used. An acousto-optic scanner is used to steer the laser beam and enable addressability of all pixels.

**Point of Contact** Gallman, Phillip  
**Role** Vendor  
**Affiliation** Coleman Research Corporation  
**Phone** 703-719-9200

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**Title** Compact Subsurface Investigation System  
**Technology ID** 2153  
**Description** The Geoprobe Model 540, is a compact subsurface soil investigation system capable of retrieving soil samples. The Geoprobe Model 540 is a 31-in. wide unit, capable of sampling in congested areas that standard soil sampling equipment would not be able to fit into to conduct sample retrieval. The unit hydraulically hammers and/or pushes a metal sampling tube into soil and hydraulically withdraws the sample to the surface. The diameters of the typical sampling tubes are such that inner plastic sample holders are used that are 1.25-in. or 2-in. inside diameter. The length of sample that can be taken with each sample withdrawal is up to two ft. The Geoprobe Model 540 is equipped with two wheels and can be moved around similar to a cart. The unit is also connected with flexible hydraulic hoses to a remote hydraulic power unit.

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**Point of Contact** Pope, Kevin  
**Role** Vendor  
**Affiliation** Geoprobe Systems  
**Phone** 209-637-1696

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**Title** Concrete Dust Suppression System  
**Technology ID** 2154  
**Description** Automatic Demolition Dust Suppression System that consists of skid-mounted water tank and 8 HP, 580 psi gasoline-powered pump connected to an array of 6-8 water spray nozzles. The skid is permanently mounted on the back of a Caterpillar 375 excavator fitted with a hoe-ram. Pressurized output of the pump is connected by flexible hose to a U-shaped, spray-nozzle ring mounted on the demolition ram. The spray-nozzle ring is enclosed in 3-in. x 6-in. tube steel for protection and is mounted approximately 5-ft. away from the ram point. Water spray can be turned on and off by either foot or hand operation by the equipment operator as needed. Dust suppression water is held in a 540-gallon water tank and is CAM-LOT mounted on the tank supply side. The gasoline-powered pump is equipped with an electric starter and electric control valve for remote operation by the equipment operator.

**Point of Contact** Kimbrell, Dennis  
**Role** Vendor  
**Affiliation** Rowand Machinery  
**Phone** 509-547-8813

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**Title** Concrete Grinder  
**Technology ID** 2102  
**Description** Lightweight, handheld concrete and coating removal tool for decontaminating or stripping concrete surfaces. The Concrete Diamond Grinder (LD 1509 FR) includes a 5-inch diamond grinding wheel that operates at 10,000 rpm and a vacuum port for dust suppression. It is suitable for flat or slightly curved walls and floors and can be used for radiological decontamination of large areas or hot spots. It weighs about 6 pounds and is powered by an electric motor.

**Point of Contact** Dow, Doug  
**Role** Vendor  
**Affiliation** CS Unitec, Inc.  
**Phone** 800-700-5919

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**Title** Concrete Shaver  
**Technology ID** 1950  
**Description** Self-propelled, electric powered, diamond shaving machine used for concrete

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and coating removal. The unit has a 10-in-wide shaving drum suitable for flat and slightly curved walls and floors, and a vacuum port for dust extraction. Its cutting depth can vary from 0 to 1/2-in, and can shave within 3 inches of a wall/floor interface or other obstruction. The cutting depth is set by a manual rotary wheel linked to a digital display. The shaving drum can be configured with a variety of diamond-impregnated blades depending on the desired surface finish.

<b>Point of Contact</b>	Bannister, Ian
<b>Role</b>	Vendor
<b>Affiliation</b>	Marcris Industries Limited
<b>Phone</b>	011-44-1302-890888

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<b>Title</b>	Concrete Spaller
<b>Technology ID</b>	2152
<b>Description</b>	Handheld concrete coating and removal system that consists of a patented spalling bit, a hydraulic cylinder, and an electric hydraulic pump. The spalling bit is inserted into a predrilled 1-in-diameter hole and removes a concrete surface area of 7-16 inches in diameter. Depth of spalling varies from 2 inches at the pilot hole location to 1/8-inch at the edge of the spall. The Concrete Spaller is suitable for flat or slightly curved concrete walls and floors and can be used for radiological decontamination of large areas or hot spots.
<b>Point of Contact</b>	Mitchell, Mark
<b>Role</b>	Vendor
<b>Affiliation</b>	Pacific Northwest National Laboratory
<b>Phone</b>	509-372-4069

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<b>Title</b>	Confined Sluicing End Effector
<b>Technology ID</b>	812
<b>Description</b>	A rotating water jet capable of a range of pressures from 100 pounds per square inch to 35,000 pounds per square inch to cut and dislodge sludge at the bottom of the tank. Using the Confined Sluicing End Effector, the tank waste sludge can be dislodged, mobilized, and conveyed out of the tank. The water jets can also be used to scarify the tank wall inner surfaces to remove waste scale. A water jet pump located inside the tank removes the sludge and liquids from the tanks. The Confined Sluicing End Effector can be deployed into a tank by either a robotic arm or a retrieval vehicle with the ability to grasp the end effector. Use of the Confined Sluicing End Effector results in much less water addition than waste retrieval using past-practice sluicing. Past-practice sluicing added significant amounts of water to mobilize the sludge (up to 10 times the waste volume).

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**Point of Contact** Alberts, Daniel  
**Role** Vendor  
**Affiliation** Waterjet Technologies  
**Phone** 253-872-1925

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**Title** CORPEX Nuclear Decontamination Process  
**Technology ID** 87  
**Description** The CORPEX (TM) Nuclear Decontamination Process for the decontamination of plutonium-contaminated facilities and equipment is a nondestructive chemical cleaning method that removes only the contaminant and the matrix that fixes the contaminant to the surface; it does not damage the substrate. The chemistry of the cleaning agent is destroyed by the addition of proprietary oxidizers, leaving only water, carbon dioxide, nitrogen gases, and the secondary waste sludge.

**Point of Contact** Hannah, Susan  
**Role** Vendor  
**Affiliation** Corpex Technologies, Inc.  
**Phone** 865-691-4877

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**Title** D&D and Remediation Optimal Planning System (DDROPS)  
**Technology ID** 2322  
**Description** The DDROPS is a special computer interface that provides a size reduction and packaging plan for tanks, piping, and other dismantled equipment.

**Point of Contact**  
**Role**  
**Affiliation**  
**Phone**

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**Title** Decommissioning In-Situ Plutonium Inventory Monitor (DISPIM)  
**Technology ID** 2241  
**Description** System that incorporates passive neutron counting and 3-D imaging to perform in-situ assay of plutonium-contaminated equipment. The DISPIM system has lower sensitivity and greater accuracy than current on-site systems.

**Point of Contact** Kapaun, Ronald W.  
**Role** Vendor  
**Affiliation** BNFL Instruments Inc.  
**Phone** 727-791-7259

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<b>Title</b> <b>Technology ID</b> <b>Description</b>	Decontamination and Conversion of Nickel Radioactive Scrap Metal 234 The objective of this task is to develop and successfully demonstrate a technically effective and cost-efficient process to remove and/or reduce the radioactive contamination of nickel. The scope also includes the study of options to recycle the nickel by using the nickel as a constituent in alloys to produce new metal products. This process for decontamination of nickel RSM and conversion of the metal to useful new products will be developed in four phases. Phase I has been completed. It included laboratory-scale investigation of process conditions, demonstration of stainless steel production from the decontaminated metal, determination of process economics, and a study of the market for products from the recycled nickel. Goals in Phase II, currently ongoing, include developing a cost-effective method to analyze the isotopic content of incoming nickel, as well as products made from that material; removing technetium from nickel by bulk and/or surface decontamination techniques; and manufacturing metal products using alloy made with contaminated nickel. Phase III will encompass integrated testing of the process. Phase IV will include full-scale testing and evaluation of the technology for decontamination and conversion of RSM to high-value products.
<b>Point of Contact</b> <b>Role</b> <b>Affiliation</b> <b>Phone</b>	McNair, Valerie Vendor Manufacturing Science, Inc. 865-481-0455

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<b>Title</b> <b>Technology ID</b> <b>Description</b>	Decontamination and Volume Reduction System (DVRS) 2242 The technology is used for decontamination and size reduction of oversized metallic transuranic (TRU) waste.
<b>Point of Contact</b> <b>Role</b> <b>Affiliation</b> <b>Phone</b>	

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<b>Title</b>  <b>Technology ID</b> <b>Description</b>	Decontamination Using Liquid Nitrogen Carrier with Solid Carbon Dioxide Pellet  1456 Adaptated waterjet technique used to cut and surface abrade for ex-situ equipment decontamination. Liquified and solidified gases, i.e., nitrogen and carbon dioxide are substituted for water and abrasives.
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<b>Point of Contact</b>	Bingham, Dennis N.
<b>Role</b>	PI
<b>Affiliation</b>	EG&G
<b>Phone</b>	208-526-1376

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<b>Title</b>	Diamond Wire Cutting Technology Assessment of Tokamak Fusion Rest Reactor Vacuum Vessel Surrogate
<b>Technology ID</b>	2389
<b>Description</b>	The Diamond Wire System consists of a diamond matrix wire made to length for each individual cut and a hydraulic drive system.
<b>Point of Contact</b>	
<b>Role</b>	
<b>Affiliation</b>	
<b>Phone</b>	

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<b>Title</b>	Direct Reading Tritium Monitor
<b>Technology ID</b>	2310
<b>Description</b>	This monitor is based on portable gas flow proportional counters that detect the low energy beta radiation from the decay of tritium. The monitor has an improved gas proportional counter that has a sensitivity of 100 Bq/100 sq.cm.
<b>Point of Contact</b>	
<b>Role</b>	
<b>Affiliation</b>	
<b>Phone</b>	

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<b>Title</b>	Dismantlement Processes Adaptation and Development
<b>Technology ID</b>	969
<b>Description</b>	Standardized dismantlement system, based on proven remote manipulator technology used in high radiation environments, for the D&D of metal research reactor vessels and components.
<b>Point of Contact</b>	Meyer, Rod D.
<b>Role</b>	PI
<b>Affiliation</b>	ETEC
<b>Phone</b>	818-586-5400

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<b>Title</b>	Dual Arm Work Platform Teleoperated Robotics System
<b>Technology ID</b>	1787
<b>Description</b>	The Dual Arm Work Platform (DAWP) consists of two 6-degree-of-freedom (DOF) Schilling hydraulic manipulator arms mounted on a 5-DOF hydraulic positioning base. DAWP is designed for use in teleoperation, telerobotic, and robotic modes. Capabilities include cutting and sizing, equipment and structure dismantlement, and materials handling.
<b>Point of Contact</b>	Madaris, Sue
<b>Role</b>	PI
<b>Affiliation</b>	Florida International University Center for Engineering
<b>Phone</b>	305-348-3727

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<b>Title</b>	Dual-Point Impedance Control for Telerobotics
<b>Technology ID</b>	2173
<b>Description</b>	A new form of sensor-assisted, human-machine cooperative control for telerobotics, referred to as dual-point impedance control. The new control scheme will merge operator and computer influences on slave manipulator motion by adjusting the authority of each, based on various sensor inputs, for various operational situations during teleoperation. The resulting control scheme will enhance the stability, efficiency, and safety of teleoperation.
<b>Point of Contact</b>	Dubey, Rajiv
<b>Role</b>	non Vendor
<b>Affiliation</b>	University of Tennessee
<b>Phone</b>	423-974-5275

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<b>Title</b>	Electret Ion Chambers
<b>Technology ID</b>	2315
<b>Description</b>	This technology consists of a charged Teflon plate (the electret) and an electrically-conductive plastic chamber. The electret is charged (positive) by the manufacturer to 700 volts. Negatively charged ions created by Alpha particles are attracted to the electret and reduce its charge. The measured drop in charge with time is converted to activity.
<b>Point of Contact</b>	Kotrappa, Paul
<b>Role</b>	Vendor
<b>Affiliation</b>	RadElec, Inc.
<b>Phone</b>	800-526-5482

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<b>Title</b>	Electromagnetic Radiography
<b>Technology ID</b>	2390
<b>Description</b>	Electromagnetic Radiography (EMR) is a non-destructive characterization

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technology that uses ultra-high impulses operating in the radio-frequency spectrum to provide subsurface characterization. EMR quantifies underground solids, liquids, chemicals, DNAPLs, heavy metals, etc., and provides a three-dimensional map of their geometry and location.

**Point of Contact**  
**Role**  
**Affiliation**  
**Phone**

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**Title** Ex-Situ Large Bore Pipe Decontamination and Characterization System  
**Technology ID** 2375  
**Description** To facilitate the decontamination and characterization of large-bore piping and thereby reduce the volume of piping required for disposal, Florida International University Hemispheric Center for Environmental Technology is designing and fabricating a Large-Bore Decontamination Process. The system consists of three main systems: the decontamination system, the characterization system, and the material handling system integration system. The decontamination system is further segregated into two modules: the decontamination module and the ventilation module.

**Point of Contact**  
**Role**  
**Affiliation**  
**Phone**

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**Title** Excel Automatic Locking Scaffold  
**Technology ID** 2320  
**Description** This is a positive locking system scaffold. Trigger release horizontal bearers are attached to vertical legs without the use of hand tools.  
**Point of Contact** Elkins, James E.  
**Role** Vendor  
**Affiliation** Bartlett Services, Inc.  
**Phone** 800-225-0385

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**Title** Excel Concrete Crusher  
**Technology ID** 2963  
**Description** The Excel 2522 Low-Pro Concrete Cursher is a 51-foot portable plant, including conveyors, feeder, crusher, screen, engine, chassis and trailer. This crusher crushes concrete in less than 2 in. pieces and also removes rebars using a powerful magnet.

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**Point of Contact** Richardson, Jerry  
**Role**  
**Affiliation** Excel Machinery, Ltd.  
**Phone** 800 858 4002

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**Title** Fast Response Isotopic Alpha Continuous Air Monitor (CAM)  
**Technology ID** 2225  
**Description** The objective of this effort is to develop, and test Continuous Air and Emission Monitoring (CAEM) instrumentation for alpha-emitting radionuclides. This instrument will be designed in order to certify the proper performance of air-borne emissions from ambient air and in equipment emissions encountered during D&D of DOE's surplus facilities. The proposed system will also meet the DOE's alpha CEM requirements through the development of an innovative, high resolution, on-line air/gas alpha monitor. The instruments will be capable of operating either as a stack emissions monitor, a process control instrument, or for the control of offgas from decontamination, dismantlement, and air handling equipment. A need exists for Continuous Air and Emissions Monitoring of alpha-emitting radionuclides in order to ensure the health and safety of workers and the environment during D&D activities. DOE must ensure that ambient and effluent air and gas streams at or leaving DOE sites do not negatively impact public safety or health. In addition, DOE must protect on-site workers safety and health from radioactive contamination. Current technology does not provide an acceptable means to rapidly validate alpha contamination levels in off gas discharges. Current alpha monitoring activities involve significant manpower from filter change out, generates waste from filter disposal, and are slow as a result of taking extracted samples through a laboratory process for analysis. Through Laboratory testing, a new instrument has demonstrated to permit extremely sensitive counting of alpha-emitters in air, providing rapid, high-resolution alpha spectrometry so that individual radionuclides can be assayed simultaneously, based upon their different alpha energies. This new instrument will be the basis for developing the CAEM.

**Point of Contact**  
**Role**  
**Affiliation**  
**Phone**

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**Title** Field Raman Spectrograph  
**Technology ID** 873  
**Description** Portable Raman spectrograph and associated sampling accessories that can be used in the field for screening, monitoring, and identification of a wide

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variety of contaminants. This instrumentation development project combines fiber optics, Raman Spectroscopy, Echelle grating, lasers, micro-optical lenses, charged-coupled devices, and fiber- optically coupled deployable probe heads. The optics allow measurements to be made from more than 50 meters between the Raman instrument and probe head. The unit is designed to be capable of operating using modest power from a portable generator and could be integrated into an instrument platform.

**Point of Contact** Haas, John  
**Role** Vendor  
**Affiliation** EIC Laboratories, Inc.  
**Phone** 617-769-9450

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**Title** Field Transportable Beta Spectrometer  
**Technology ID** 1853  
**Description** Transportable instrument utilizing solid scintillation, coincident counting, and low background photomultiplier tubes to count filters and other solid media. Instrument software provides for real-time spectral analysis. Detection of Sr-90, Ce-137, Tc-99 and other beta emitters can be achieved in the 40 pCi range. A field demonstration at CP-5 allows for evaluation of potential cost and performance efficiencies.

**Point of Contact** Isenhour, Thomas  
**Role** Vendor  
**Affiliation** Triangle Research Ltd.  
**Phone** 412-941-0151

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**Title** FRHAM-TEX Anti Contamination Suit  
**Technology ID** 1854  
**Description** One-piece disposable, breathable, waterproof coverall for hot/wet atmospheres. Coverall construction consists of multiple layers of hydrophilic film and polyester sintera.

**Point of Contact** Brown, Jim  
**Role** Vendor  
**Affiliation** Frham Safety Products  
**Phone** 803-366-5131

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**Title** Gamma Cam (TM) Radiation Imaging System  
**Technology ID** 1840  
**Description** The GammaCam (TM) System displays the relative strength and location of gamma radiation as a two-dimensional image superimposed on the corresponding visual image. GammaCam consists of a portable sensor head

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that contains a gamma-ray imaging system and a TV camera. The superimposed radiation and visual images are displayed on a standard portable PC computer screen located several hundred feet from the radiation area. The PC controls the data acquisition time, the field of view, and the image display. The GammaCam has been demonstrated for imaging radiological spills, for isolating radiation sources located inside a concrete vault, and for detecting and eliminating areas of radiation leakage in temporary shielding.

**Point of Contact** Patrie, Bill  
**Role** Vendor  
**Affiliation** AIL Systems  
**Phone** 800-944-1180

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**Title** Gamma Ray Imaging System  
**Technology ID** 1793  
**Description** The system consists of a 20 mm (dia) x 22 mm (long) CsI(Tl) detector, surrounded by truncated cone tungsten collimator with variable view angle (2, 4, and 9 degrees). This system is also equipped with a LASER range finder that determines the location of contamination (radiation) within 2 cm at a distance of approximately 270 cm from surfaces. In addition the system employs a high-resolution video camera to provide pictures of measurement locations within its view angle. Reports generated by the BNFL RadScan 600 are two-dimensional angular plots of Cs-137 and Co-60 contamination level in units of counts per second (cps). These plots can be in the form of color-coded surface plots, contour plots, or log plots. All radiological readings are stored within a database in the form of a gamma spectrum for each horizontal and vertical angle position. The cps readings can be translated to mR/h simply by multiplying the cps by a predetermined conversion factor. Similarly, the angle coordinates can easily be transformed into x-y coordinates.

**Point of Contact** Romero, Mike  
**Role** Vendor  
**Affiliation** PSC  
**Phone** 505-662-4192

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**Title** Gas Phase Decontamination Process for Gaseous Diffusion Equipment  
**Technology ID** 88  
**Description** Long-term, low-temperature (LTLT) technique for in situ decontamination of diffusion-cascade equipment utilizing a mixture of treatment gases. The treatment gases are injected into the diffusion cell at low pressure and allowed to react with the solid uranium deposits. Once the reactions have progressed to the desired level, the cell gases are removed and either returned

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to the operating cascades where recovered uranium hexafluoride is eventually withdrawn as low-enriched uranium product, or passed through cold traps to remove recovered uranium hexafluoride.

**Point of Contact** Riddle, Russ  
**Role** PI  
**Affiliation** DOE-Portsmouth Enrichment Office  
**Phone** 614-897-2331x2189

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**Title** Geophysical Data Fusion for Subsurface Imaging  
**Technology ID** 290  
**Description** Software package for use in a workstation for geophysical data fusion for subsurface imaging. The software is used for characterization of hazardous waste sites by delineation of contaminant plumes and by identification of thin clay layers and geological discontinuities up to a depth of 300 feet. Technology combines non-invasive geophysical sensors including Time Domain Electromagnetics (TDEM) and near surface seismic exploration techniques. A high frequency seismic source is used to identify thin strata, while algorithms differentially process TDEM which will result in a three-dimensional display. The main elements of a fundamental data fusion system have TDEM and seismic data processed separately to provide inputs to sensor data fusion. Current TDEM subsurface images are obtained by an EM-inversion process that adjusts the image until it is consistent with the data. Fundamental sensor fusion adjusts the image until it is simultaneously consistent with data from all the sensors. EM inversion uses pre-processed data rather than raw data in the inversion steps leading to a geologic cross section. Fundamental sensor fusion uses the same pre-processed data as EM inversion and also uses pre-processed data from other sensors. In addition, sensor fusion may use geologic cross sections from individual sensors to initialize fusion processing. Geological site conditions and geophysical boundary conditions are also used in the fusion process.

**Point of Contact** Gibbs, Bruce  
**Role** Vendor  
**Affiliation** Fusion and Control Technology, Inc.  
**Phone** 301-474-4541

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**Title** Ground Based Laser Induced Fluorescence Imaging  
**Technology ID** 1999  
**Description** Hand-held survey tool combined with an airborne system using laser-induced fluorescence techniques for the detection of uranium, heavy metals, organic compounds, and vegetation stress due to uptake of contaminants. Laser light is used to "excite" uranium oxide molecules that may be present as a surface contaminant. Energy is then released from the molecules in the form of



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fluorescence, which is then detected and displayed on a monitor attached to a laser. The laser can be operated in a panning motion to survey large areas quickly, or used to survey discreet two foot by two foot areas at a time. Unlike physical swipes, which must be collected from the actual surface being surveyed, the LIF instrument can be operated up to 10 meters away from the surface being studied. Detection of surface contamination occurs virtually instantaneously.

**Point of Contact**  
**Role**  
**Affiliation**  
**Phone**

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<b>Title</b>	Hand Held Shear
<b>Technology ID</b>	2304
<b>Description</b>	Cutting and size reduction tool operated using 100V AC electric power units which drives a hydraulic pump reservoir. The hydraulic pump is rated at 10,000 psi. System is portable and includes a variety of cutting end-effectors including oval ('O') blade cutters and straight blade cutter for cutting various diameters of piping and flat stock, and an articulating head mini-cutter for cutting materials in difficult to access situations. The shears can cut pipes that are attached to walls without first having to loosen the pipe hangers, and can crimp piping during cutting so that the pipe contents are contained.
<b>Point of Contact</b>	Brandy, Michael
<b>Role</b>	Vendor
<b>Affiliation</b>	Res Q Tek, Inc.
<b>Phone</b>	314-692-0065

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<b>Title</b>	Heat Stress Monitoring System
<b>Technology ID</b>	1953
<b>Description</b>	The VitalSense Telemetry System for real-time monitoring of a worker's physical state while working in a heat stress environment. The system consists of electronics and wireless radio components, an 8-hour rechargeable battery supply, and a series of temperature, heart rate, and body activity probes enclosed in a small plastic case worn by the worker. The wearable monitor weighs approximately one and a quarter pounds and can directly monitor up to four channels (heart rate, body activity, and skin and ear canal temperature data). Each monitoring channel on this system can be preset to an alarm set point. If incipient heat stress or high heart rate is detected, the system will automatically activate a light-emitting diode warning device mounted near the worker's eyes or a worker manning the supervisory station can warn the worker by manually activating an alarm. As many as ten workers can be monitored in series up to a 1,000 feet from a

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single supervisory station. Individual information is automatically updated every 3 seconds and recorded by the computer in a sequential fashion. The data can be manipulated for graphs and other presentation material. The unit has been designed to accommodate additional channels for either more physiological signals or for monitoring external sensors such as radiation, toxic chemicals, or noise.

**Point of Contact** Ebner, Denny  
**Role** Vendor  
**Affiliation** Mini-Mitter  
**Phone** 541-593-8639

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**Title** High Productivity Vacuum Blasting  
**Technology ID** 2224  
**Description** Vacuum blasting is used to remove radioactive contamination, PCB's, and lead-based paint from material surfaces. The objective of this joint project between FIU and LTC Americas is to improve the productivity and economics of existing vacuum blasting systems resulting in increased worker protection, increased cleaning rates, and improved recycling efficiency of the blasting material.

Vacuum blasting is used to remove radioactive contamination, PCB's, and lead-based paint from material surfaces. The objective of this joint project between FIU and LTC Americas is to improve the productivity and economics of existing vacuum blasting systems resulting in increased worker protection, increased cleaning rates, and improved recycling efficiency of the blasting material.

**Point of Contact** Miller, Bob  
**Role** Vendor  
**Affiliation** LTC Americas  
**Phone** 800-822-2332

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**Title** High Resolution Subsurface Imaging and Neural Network Recognition  
**Technology ID** 314  
**Description** A high-frequency EM imaging system for the frequency range 30kHz to 30MHz that provides high resolution over the range of possible depths that are of interest on Department of Energy (DOE) projects. The data collected can be interpreted in the field in near-real-time using neural networks. The network output is the identification and location of subsurface targets. The high accuracy of the imaging system, coupled with the fast, accurate interpretation by the neural networks, provides faster non-intrusive mapping of contaminated sites with less ambiguity. Tests of the accuracy of the existing low-frequency system and neural network interpretation indicated

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	that a buried pipe could be located with 97% accuracy for horizontal position, 99% accuracy for depth and 94% accuracy for conductivity.
<b>Point of Contact</b>	Sternberg, Ben K.
<b>Role</b>	PI
<b>Affiliation</b>	
<b>Phone</b>	602-621-2439

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<b>Title</b>	High Speed Clamshell Pipe Cutter
<b>Technology ID</b>	1807
<b>Description</b>	The High-Speed Clamshell Pipe Cutter-Models 616RBL and 624RBL-developed by Tri-Tool, Inc., are lightweight, split frame pipe lathes for severing and/or beveling in-line pipe with a range of 10-in. through 16-in. and 18-in. through 24-in. nominal diameter that require minimal radial and axial clearances. The radial clearance requirement from the walls, floors, or adjacent pipes is 7-in.
<b>Point of Contact</b>	Riley, Paul
<b>Role</b>	Vendor
<b>Affiliation</b>	Tri Tool, Inc.
<b>Phone</b>	916-351-0144

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<b>Title</b>	Houdini-II Remotely Operated Vehicle System
<b>Technology ID</b>	2085
<b>Description</b>	An improved version of the Houdini remotely operated vehicle system. Houdini is an approximately 4 foot by 5 foot tracked vehicle weighing approximately 1000 pounds. Houdini has a plow blade and can be operated like a mini bulldozer. It also has on board a remotely controlled arm that allows the vehicle to reach up to about 5 feet. A large tether attached to the back of the vehicle provides the control signals, hydraulic hoses, air hoses, water hoses, and video cables required to remotely operate the system from a control console. There is one video camera on the chassis and one video camera on the wrist of the arm. The arm can lift up to 250 pounds. Houdini has the capability to fold the chassis like a collapsing parallelogram and lay the arm down on the chassis so that the vehicle can be lowered through a hole as small as 24 inches in diameter. The vehicle is a multi purpose remote work platform that can be used for many decontamination and decommissioning tasks and for operations in large underground storage tanks.
<b>Point of Contact</b>	Denmeade, Tim
<b>Role</b>	Vendor
<b>Affiliation</b>	RedZone Robotics, Inc.
<b>Phone</b>	412-765-3064

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<b>Title</b>	Houdini: Reconfigurable In Tank Mobile Robot
<b>Technology ID</b>	98
<b>Description</b>	The Houdini system performs waste retrieval, waste mobilization, waste reduction, and other decommissioning tasks. Houdini is a tethered, hydraulically powered, track- driven worksystem with an expandable frame chassis. When fully deployed, Houdini measures 4 feet by 5 feet; but the system can be collapsed to fit through confined entries as small as 24 inches in diameter. Houdini's reliable actuation systems, low voltage servo-valving, inherent spark-proof hydraulic operation, environmentally-safe hydraulic fluid, self-collapsing capability, hand-operable winch, and hard-wired suitcase control console make for a safe and efficient system.
<b>Point of Contact</b>	Pollick, Richard
<b>Role</b>	Vendor
<b>Affiliation</b>	RedZone Robotics, Inc.
<b>Phone</b>	412-201-7232
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<b>Title</b>	In Situ Chemical Treatment of Asbestos
<b>Technology ID</b>	73
<b>Description</b>	Process for the in-situ chemical conversion of asbestos containing material (ACM) found in many facilities as fire proofing and insulating materials, into nonregulated reaction products. The process involves spraying a chemical onto the ACM, where it is absorbed and the conversion takes place. The converted material is also stabilized to prevent airborne particles from posing any health hazards.
<b>Point of Contact</b>	Baker, Richard C.
<b>Role</b>	PI
<b>Affiliation</b>	DOE
<b>Phone</b>	630-252-2647
<hr/>	
<b>Title</b>	In Situ Object Counting System
<b>Technology ID</b>	2098
<b>Description</b>	Germanium-detector gamma-ray characterization system that can identify specific nuclei, and quantitatively determine the corresponding radioactive inventory in situ. ISOCS response to a series of point sources surrounding it have been characterized using a Monte Carlo code. Steel-jacketed lead shielding can be mounted around the Germanium detector to provide 1 or 2 inches of shielding from background radiation, and to change the field of view between 30, 90, or 180 degrees. The detector rotates on the cart for alignment with the target. A computer controls the InSpector multichannel analyzer and the Genie-PC software provides peak identification, data and error analysis, and system quality assurance. The ISOXSW software

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automatically determines the relationship between the radioactive source geometry, the measured count rate, and the amount of radioactive material present using the ISOCS characterized detector data.

<b>Point of Contact</b>	Elmore, Dale
<b>Role</b>	Vendor
<b>Affiliation</b>	Canberra Industries, Inc.
<b>Phone</b>	317-298-7953

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<b>Title</b>	In-Situ Pipe Decontamination System
<b>Technology ID</b>	2379
<b>Description</b>	The goal of this FIU-HCET project is to develop a low-cost and efficient system for in-situ decontamination of horizontal pipes ranging from 10 to 15 feet long, which does not release contaminants into the environment or generate secondary waste. The design utilizes a manually deployed grit blasting system.
<b>Point of Contact</b>	
<b>Role</b>	
<b>Affiliation</b>	
<b>Phone</b>	

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<b>Title</b>	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System (LARADS)
<b>Technology ID</b>	1946
<b>Description</b>	LARADS integrates an auto-tracking laser system, used to conduct civil surveys, with a radiological detection system to obtain position data and radiological survey information. The data is sent from the detector to receiving station, and then combined into electronic files to provide clear, detailed, and accurate surveys. Reports can be graphical, with color-coded radiological levels overlaid on CAD drawings or on photographs.
<b>Point of Contact</b>	Moroney, John
<b>Role</b>	Vendor
<b>Affiliation</b>	Thermo Hanford, Inc.
<b>Phone</b>	509-375-4675

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<b>Title</b>	INEEL ASTD: Release of Concrete for Recycle from D&D Projects
<b>Technology ID</b>	2373
<b>Description</b>	This project is a study to assess the savings potential of recycling concrete generated during D&D of contaminated DOE facilities. Following release for unrestricted use, concrete rubble will be processed and made available for use as concrete aggregate, road base, or excavation fill material.

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**Point of Contact**  
**Role**  
**Affiliation**  
**Phone**

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<b>Title</b>	Integrated Vertical and Overhead Decontamination System
<b>Technology ID</b>	2378
<b>Description</b>	The objective of this project is to fabricate and test an innovative technology for the purpose of characterizing and decontaminating vertical and overhead structures.
<b>Point of Contact</b>	
<b>Role</b>	
<b>Affiliation</b>	
<b>Phone</b>	

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<b>Title</b>	Intelligent Inspection and Survey Robot
<b>Technology ID</b>	272
<b>Description</b>	Robotic autonomous inspection system designed with enhanced intelligence and navigation capabilities to conduct routine inspection of stored waste drums in aisles which are 36" or greater in width. The system deploys on an assigned inspection mission, collecting of required survey and inspection information, generating and maintaining mission data records, and reporting the completion of the mission. The major subsystems include: a narrow-aisle vehicle base and application turret; an onboard ultrasonic system and lidar system for navigation and collision avoidance; radio communications systems; an autocharging station with docking instrumentation and referencing capability; work packages for the manipulations of cameras and other instruments; and onboard and offboard computing systems for mission planning, management, and reporting. A vision work package is comprised of a camera, illumination systems, and a deployment system along with pattern recognition software that can identify "suspect" drums. This visual inspection module is used during autonomous inspection missions that may be deployed during work shifts when personnel and other equipment would not be in the warehouse. The acquired data can be sent via the charging station, or other autodocking stations designated for that purpose, to offboard computers.
<b>Point of Contact</b>	Holland, John
<b>Role</b>	Vendor
<b>Affiliation</b>	Cybermotion
<b>Phone</b>	800-762-6848

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<b>Title</b>	Intelligent Mobile Sensor System for Autonomous Monitoring and inspection
<b>Technology ID</b>	264
<b>Description</b>	Mobile robotics device that operates in aisles and rows of drums, can inspect leaks, detect location, surface dents and drum tilt. It can also detect rust and corrosion and interface with a site database for report generation.
<b>Point of Contact</b>	Haley, Dennis C.
<b>Role</b>	Vendor
<b>Affiliation</b>	Martin Marietta Energy
<b>Phone</b>	865-576-4388

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<b>Title</b>	Interactive, Computer-Enhanced, Remote-Viewing System
<b>Technology ID</b>	33
<b>Description</b>	The Integrated, Computer-Enhanced, Remote-Viewing System (ICERVS) provides a reliable geometric description of a remote environment. The system and software provides topographical mapping by a structured light subsystem, video display of a workspace by a remote-viewing subsystem, simulation of sensor subsystems, enhanced data analysis and visualization tools, enhanced geometric-modeling capabilities, and an integrated user interface.
<b>Point of Contact</b>	Sumigray, William
<b>Role</b>	Vendor
<b>Affiliation</b>	Mechanical Technology, Inc.
<b>Phone</b>	518-785-2831

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<b>Title</b>	Internal Duct Characterization System
<b>Technology ID</b>	42
<b>Description</b>	Remotely-operated inspection system designed to characterize and visually inspect contaminated ventilation duct work. The IDCS consists of a control station, a reel-mounted tether for data communication, and a pipe crawling vehicle. The IDCS vehicle can travel over 200 feet in round ducts six inches in diameter and larger, and in rectangular ducts six inches square and larger. The vehicle visually inspects the interior condition of ducts using a high-resolution color video camera, and has an integrated radiation sensor to detect significant levels of radioactivity. Directional sensors on the vehicle provide information to show vehicle position and attitude, and well as provide information which could be used for as-built mapping of the ductwork. The entire vehicle is made from stainless steel and is designed to be washed down/decontaminated. The IDCS system also provides limited contaminant sampling and decontamination capabilities.

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**Point of Contact** Knight, Terry  
**Role** Vendor  
**Affiliation** Inuktun Services, Ltd.  
**Phone** 360-650-0460

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**Title** Laser Cutting and Size Reduction  
**Technology ID** 1477  
**Description** Neodymium Yttrium Aluminum Garnet (Nd:YAG) laser system that utilizes fiber optics to remotely cut and size reduce equipment.  
**Point of Contact** Kugler, Tom  
**Role** Vendor  
**Affiliation** Lumonics  
**Phone** 800-262-0160

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**Title** Laser Decontamination and Recycle of Metals  
**Technology ID** 955  
**Description** Method of using lasers to decontaminate metals in a manner that requires no solvents, avoids exposure of expensive instrumentation to radionuclides, and is remotely performed for maximum worker protection. This method performs surface decontamination by rastering a powerful laser across the metal to remove contaminants within 0.001" of the surface, and bulk decontamination employing selective laser ionization to remove impurity.  
**Point of Contact** Edelson, Martin C.  
**Role** PI  
**Affiliation** Ames  
**Phone** 515-294-4987

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**Title** Laser Surface Cleaning  
**Technology ID** 32  
**Description** Modified high-power, high-repetition-rate industrial laser for ablating coatings from metal and concrete surfaces in a controlled manner. The laser uses proper combinations of wavelength, pulse duration, energy, power densities, pulse repetition rate, and scan rate. Removes coating material from the surface and surface pores. The laser ablates material faster than a thermal wave can propagate into the substrate, preventing entertainment of surface contamination in molten substrate, leaving behind a cool surface. Damage to substrate is avoided and volatilization of contaminants is reduced. A gas, vapor, and particulate suction device captures the ablated material. A vacuum system draws the mixture of entrained air and gases, vapors, and particulates from ablation through filtering stages.



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**Point of Contact**

<b>Role</b>	Vendor
<b>Affiliation</b>	F2 Associates
<b>Phone</b>	505-271-0260

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<b>Title</b>	Lead Paint Analyzer
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<b>Technology ID</b>	2317
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<b>Description</b>	The Niton 700 series analyzer is hand-held, battery operated unit which uses x-ray fluorescence spectroscopy to analyze 25 elements including the presence of lead in paint.
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<b>Point of Contact</b>	Pesce, John
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<b>Role</b>	Vendor
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<b>Affiliation</b>	Niton Corporation
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<b>Phone</b>	800-875-1578
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<b>Title</b>	Light Duty Utility Arm
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<b>Technology ID</b>	85
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<b>Description</b>	System for deploying tools and sensors, called end effectors, in underground storage tanks. The system is functionally divided into major equipment subsystems and additional ancillary and support equipment including (1) arm and deployment system, (2) tank riser interface and confinement system, (3) operations control center, (4) utilities and support systems, and (5) end effectors. Three types of Light Duty Utility Arm deployment platforms have been delivered to support specific site needs at the Hanford Site, the Oak Ridge Reservation, and the Idaho National Engineering and Environmental Laboratory. The Hanford Site Light Duty Utility Arm is a truck-based system providing a light-duty payload primarily focused on inspection and characterization applications. This design was modified to provide a lighter weight trailer based mobile platform for the Idaho National Engineering and Environmental Laboratory, due to concerns on tank dome loading restrictions. A modified, Light Duty Utility Arm was developed for the Oak Ridge Reservations gunite and associated tanks to enable the technology to be extended to perform waste heel retrieval operations.
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<b>Point of Contact</b>	Fuller, Brian
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<b>Role</b>	Vendor
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<b>Affiliation</b>	Spar Aerospace Limited
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<b>Phone</b>	905-790-4439
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<b>Title</b>	Liquid Membrane System for Removal and Concentration of Transuranic Elements
<b>Technology ID</b>	277
<b>Description</b>	A system employed for selective removal and concentration of TRUs and 90Sr from dissolved tank waste to minimize the volume of high-level waste (HLW).
<b>Point of Contact</b>	Lin, Zhen Wu
<b>Role</b>	PI
<b>Affiliation</b>	
<b>Phone</b>	508-635-0123

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<b>Title</b>	Liquid-Nitrogen Cooled Diamond-Wire Concrete Cutting
<b>Technology ID</b>	2107
<b>Description</b>	Variation of diamond-wire concrete cutter for size reduction of both radiological and nonradiological thick concrete. The diamond wire saw is made of a 1/4-in aircraft quality steel cable running through a series of diamond-impregnated beads. A Shar-Lyne hydraulic motor powers the diamond-wire saw-drive wheel. A 3-ft diameter drive wheel generates wire tension and can move the diamond wire as fast as 10-ft/s. A compound guide-pulley system guides the diamond wire. A small nitrogen pool located in a 3-ft long by 3-in diameter pipe located at the slack side of the diamond wire is used to cool the saw. The diamond wire saw is pulled through the liquid nitrogen to cool the wire. The liquid nitrogen is supplied by a 200-liter, 185 psi pressure liquid nitrogen bottle. The system uses a 50-horsepower hydraulic pump that requires 60 amp 440VAC electric power. The pump can provide up to 1500 psi pressure.
<b>Point of Contact</b>	Hulick, Robert
<b>Role</b>	Vendor
<b>Affiliation</b>	Bluegrass Bit Co.
<b>Phone</b>	800-320-1462

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<b>Title</b>	Long Range Alpha Detection for Component Monitoring
<b>Technology ID</b>	2382
<b>Description</b>	The BNFL IonSens(TM) Monitor measures alpha contamination on surfaces by detecting the ionized air molecules produced by the alpha particles when they interact with ambient air. The device includes three modular units; an input filter unit, a component chamber, and a detector unit. The component chamber can either be a Large Item Monitor (with an internal volume of about 1 cubic meter), or a Cut Pipe Monitor (about 2 meters long). Three Cut Pipe Modules can be used, giving the ability to monitor pipes and scaffold tubes up to six meters in length. Air is drawn through the assembly, picking up the induced ions and delivering them to the detector unit which counts the

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ions and converts them to a corresponding contamination level. A built-in calibration source and an onboard computer make operation simple and straightforward. The software creates a database that includes item identification, total activity, total activity standard error, time, and date.

**Point of Contact** Gardner, Fred  
**Role** Vendor  
**Affiliation**  
**Phone** 865-675-6853

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**Title** Low-Density Cellular Concrete Void Filling  
**Technology ID** 1846  
**Description** Technology for filling vessel void spaces to allow the vessel to withstand the compressive load resulting from the overburden after burial of the vessel. The solid void filling media prevents subsidence of the OSDF cap in the even to vessel failure due to rusting. This technology uses a low-density cellular concrete (LDCC) as the void filling media. The LDCC is generated by producing into the cement-water mix (no aggregate), an aerated protein based surfactant (air bubbles), which greatly reduces the concrete density but still provides the necessary strength.  
**Point of Contact** Stephens, Pat  
**Role** Vendor  
**Affiliation** Pacific International Grout Co.  
**Phone** 360-733-5270

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**Title** Mega-Tech Hydraulic Shears  
**Technology ID** 2953  
**Description** Has been demonstrated to remove legs from plutonium glove boxes 3 to 4 times faster than baseline technology (reciprocating saw). Legs on glove boxes are typically either 3-inch diameter pipe or unistrut. Mega-Tech offers various cutting tools including a portable conduit cutter for cutting standard or thin-wall conduit under 1.5 inches and small bore stainless steel tubing, and operates with 0.75 inch radial clearance and a tool standoff of 12 inches; and a portable blade plunging cutter for cutting structural shapes, pipe, large conduit, or anything that will fit within the cutting anvil, and operates with a 2 inch clearance and 24 inch standoff.  
**Point of Contact**  
**Role**  
**Affiliation**  
**Phone**

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<b>Title</b>	Metal Recycle Technology
<b>Technology ID</b>	1611
<b>Description</b>	Technologies for the decontamination, recycle, and reuse of radiologically contaminated scrap metal (RSM) from various sites of the DOE complex.
<b>Point of Contact</b>	Hayden, Wayne H.
<b>Role</b>	PI
<b>Affiliation</b>	Lockheed Martin Energy Systems
<b>Phone</b>	865-574-6936

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<b>Title</b>	Mobile Automated Characterization System
<b>Technology ID</b>	1798
<b>Description</b>	The Mobile Automated Characterization System (MACS) is a commercially-available, battery-powered, autonomous robot base supplemented by a laser positioning system and a scintillation detector array. MACS can detect alpha and beta contamination, and moves over floors at a speed of one inch per second.
<b>Point of Contact</b>	Coffey, Michael
<b>Role</b>	POC
<b>Affiliation</b>	Argonne National Laboratory
<b>Phone</b>	630-252-4315

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<b>Title</b>	Mobile Characterization System for Large Crates
<b>Technology ID</b>	2959
<b>Description</b>	The unit is similar in concept to the VJ Technologies drum NDE systems, but can accept crates up to 77' high, 77' wide, and 133' long. Crates are placed on a trolley that moves the crate into a shielded vault and past a 420 kV x-ray generator targeted at an image intensifier.
<b>Point of Contact</b>	
<b>Role</b>	
<b>Affiliation</b>	
<b>Phone</b>	

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<b>Title</b>	Mobile Robot Worksystem (ROSIE)
<b>Technology ID</b>	1799
<b>Description</b>	Robotic system for deploy tooling for selective equipment removal and other D&D tasks. A semi-automatic robotic perception system, called 'Artisan', analyzes and generates a geometric model of the worksystem's surroundings. Rosie provides the capability to do remote work in a variety of D&D applications while Artisan provides capabilities that help Rosie operators perform tasks faster and safer. System provides remote capabilities to operate

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tools (e.g. Dual Arm Work Platform), manipulate and package contaminated objects, and position sensors. Features include: Power and signal tether for communications and unlimited work duration; Computer control for precise positioning, motion coordination, and status monitoring; Workspace geometry modeling to enhance remote viewing, improve robot control, and improve speed of task execution. A high-reach telescoping boom is capable of positioning 2000 lbs throughout a large work envelope. The boom is mounted on an omni-directional wheeled locomotor.

**Point of Contact** Pollick, Richard  
**Role** Vendor  
**Affiliation** RedZone Robotics, Inc.  
**Phone** 412-201-7232

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**Title** Mobile Work Platform  
**Technology ID** 2243  
**Description** This is a multi-articulating, folding main boom attached to a mobile chassis by means of a 360 degree rotating turret assembly. Attached to the telescoping jib end of the main boom are two independently operable arms. Both arms can work at a 90-degree angle off of either side of the main boom arm. The mobile work platform is self-propelled and can steer each of the four wheels independently.

**Point of Contact** Trost, Victor  
**Role** non Vendor  
**Affiliation** Eagle Tech  
**Phone** 440-542-0440

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**Title** Modified Light Duty Utility Arm (MLDUA)  
**Technology ID** 40  
**Description** A manipulator system used for deploying storage tank characterization and waste retrieval tools. Characterized by a 45-ft. vertical extension, 15-ft. horizontal reach, and 2,500-lb. payload, it has the ability to be deployed through a 12-in. riser. Controls allow transition between robotic and teleoperated control allowing an operator to modify a robot trajectory in real-time based on hand controller input, and then return to robotic control.

**Point of Contact** Hill, Brian  
**Role** Vendor  
**Affiliation** Spar Aerospace Limited  
**Phone** 905-790-4473

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## Appendix E

### Accepted OST Technologies

<b>Title</b>	Modular Manipulator for Robotics Applications
<b>Technology ID</b>	2199
<b>Description</b>	The proposed family of modular actuators, with their DISC(R) Distributed Intelligent Servo Control) electronics and the associated links and yokes, provides a set of tools from which an almost limitless variety of automated machines can be created on demand. Each actuator module contains sensors, DISC(R) control electronics, motor, bearings, geartrain and mechanical interfaces. With the addition of low cost links, yokes, an open-architecture PC-based system controller, and unified operational software, this spectrum of actuators can be integrated into a completely functional robotic manipulator system. The use of DISC(R) technology provides embedded intelligence and the capacity for true 'plug-and-play' operation. The open-architecture on which this system is based eliminates proprietary interfaces and communications which serve to limit the capability and flexibility of automation equipment. Additionally, operational software developed by UT Austin utilizes the open, modular architecture of ARM's technology to greatly enhance the capabilities of conventional robotic control systems.
<b>Point of Contact</b>	Geisninger, Joseph
<b>Role</b>	Vendor
<b>Affiliation</b>	ARM Automation
<b>Phone</b>	512-305-0277

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<b>Title</b>	NITON 800 Series Multi-Element Spectrum Analyzer
<b>Technology ID</b>	2397
<b>Description</b>	The NITON 800 series analyzer is a hand-held, battery operated unit that measures 8-in x 3-in x 2-in and weighs 2.5 pounds. The analyzer uses x-ray fluorescence spectrum analysis to identify and quantify elements in metal and then compares the readings to a built-in library to determine a metal's alloy. The library contains 300 elements and alloys, and can be customized to identify other elements and alloys (depending on the sources in the instrument). The basic unit utilizes a Cadmium-109 source, but each analyzer unit can hold up to two sources. These sources include Iron-55 and Americium-241. Pushing a safety button located on the side of the unit and placing it against a surface opens the shutter window. Within seconds the unit beeps, and displays the results. The analyzer stores up to 1,000 data sets, including sample identification codes using a barcode reader. The data is easily downloaded to a conventional computer when sampling has been completed. Batteries are good for 8-hrs and charge in less than 2 hours and it can be carried, shipped, or transported without exterior labeling, conforming to 49 CFR 143.421.
<b>Point of Contact</b>	Pesce, John
<b>Role</b>	Vendor
<b>Affiliation</b>	
<b>Phone</b>	800-875-1578

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## Appendix E

### Accepted OST Technologies

<b>Title</b>	Non-Intrusive Liquid Level Detection System
<b>Technology ID</b>	2403
<b>Description</b>	The objective of the Phase A effort is to demonstrate an Infrared-based Liquid Level Detection (LLD) technology as part of the CDI characterization program. Demonstration of the LLD system is to be of sufficient scope such that definitive data/information are generated to thoroughly compare the technical performance, cost, and other benefits of the system to Hanford's baseline technologies/methods for detecting liquid levels in tanks and other vessels, and in piping systems. Results of the technology demonstration are to be succinctly reported and widely communicated throughout the DOE complex, and beyond. The ultimate goals of this effort are: (1) to support the characterization project objectives of the CDI, and (2) to facilitate deployment of the IR-based LLD system -- should the system prove advantageous. The object of the Phase B effort is to perform actual characterization-related D&D of contaminated facilities in the DOE complex, and describe the potential deployment services to be completed.

**Point of Contact**

**Role**

**Affiliation**

**Phone**

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<b>Title</b>	NuFab Anti Contamination Suit
<b>Technology ID</b>	1855
<b>Description</b>	One-piece, disposable waterproof coverall for hot/wet atmospheres, constructed of a tri-laminated composite material using spun bonded non-woven polypropylene and microporous layers.

**Point of Contact** Finley, Len

**Role** Vendor

**Affiliation** G/O Corp.

**Phone** 800-933-8501

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<b>Title</b>	Nukem Copper Recycle System
<b>Technology ID</b>	2958
<b>Description</b>	The system shreds and grinds contaminated electric cable into small particles. An air classifier separates the lighter cable insulation from the heavier copper granules. Contaminated dust is collected by a HEPA filter.

**Point of Contact**

**Role**

**Affiliation**

**Phone**

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## Appendix E

### Accepted OST Technologies

<b>Title</b>	NURES Nuclide Removal System
<b>Technology ID</b>	2937
<b>Description</b>	The Nuclide Removal System (NURES) technology uses ion exchange principles to selectively remove targeted radionuclides, providing more efficient treatment of contaminated liquids.
<b>Point of Contact</b>	
<b>Role</b>	
<b>Affiliation</b>	
<b>Phone</b>	

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<b>Title</b>	Oil Solidification
<b>Technology ID</b>	2313
<b>Description</b>	NOCHAR7 Petro Bond is specifically designed as a petroleum-based liquid absorbent. It can be used for free-liquid control in storage, transport, and disposal of low-level radioactive waste.
<b>Point of Contact</b>	
<b>Role</b>	
<b>Affiliation</b>	
<b>Phone</b>	

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<b>Title</b>	Online Measurement of the Progress of Decontamination
<b>Technology ID</b>	2376
<b>Description</b>	Current methods for in-process characterization usually require cessation of work to allow for radiation surveys to assess the rate of decontamination. Integrating radiation sensors with a decontamination technology would allow for in-process or online measurement of the progress of decontamination. Since present methods do not use in-process evaluations for the progress of decontamination, they may allow for 'over-removal' of materials (removal of contaminated and non-contaminated materials together) as well as under-removal of material (not enough contaminated material has been removed). Over-removal increases the volume of radioactive waste to be disposed of and therefore disposal costs. On the other hand, under-removal will increase the exposure of the D&D worker to radiation as well as increase the cost since multiple surveys are required until all the contamination has been removed. Integrating technologies would facilitate the removal of only the contaminated concrete and reduce the total volume of radioactive waste to be disposed of. In support of the D&D Focus Area, Florida International University Hemispheric Center for Environmental Technology (FIU-HCET) is developing an integrated system that combines in-process characterization methods, especially in the area of radiation sensors, with suitable decontamination technologies, in order to combine decontamination and



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characterization activities. The technology integration will also include data collection, storage and transmission components on the instrument for remote monitoring, and computer downloading functions. A decontamination instrument with characterization and data collection technologies incorporated into it would allow for continuous decontamination activities, coupled by a real-time assessment of the amount of contamination removed and/or the amount remaining. The result would be a significant gain in productivity accompanied by cost and time savings.

#### Point of Contact

##### Role

##### Affiliation

##### Phone

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##### Title

##### Technology ID

##### Description

Operator Interface for Robotic Applications

281

An integrated and reconfigurable operator control station integrating state-of-the-art display, computing, interface and communications hardware and software. The architecture lends itself to easy modification, including adaptation to different operator preferences and reconfiguration for interfacing different remote work systems. All functions can all be controlled from one console station to enable easy ergonomic testing, control display-mode configuration, and support operator training sessions. The system is configured to 1) optimize the information display and operational efficiency of a human operator controlling or supervising remote systems, 2) control the display configuration, live video links, and graphical overlays; and 3) input information using the hard-wired switches and the touch-screen display. The system consists of a large multi-screen projection-TV system framed on both sides by several high-resolution TV monitors; embedded computing; stereo speakers; and a reconfigurable operator console and control chair module with various removable interface modules (such as joysticks, buttons, touch-screen, etc.).

##### Point of Contact

##### Role

##### Affiliation

##### Phone

Schempf, Hagen

PI

Automatica

412-268-6884

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##### Title

##### Technology ID

##### Description

Oxy-Gasoline Torch

1847

The Oxy-Gasoline Safety Torch for cutting of metal piping, structural steel, equipment, etc. uses a small pressure vessel which holds gasoline and air. The unit is pressurized by either a self-contained hand pump or by an external source of compressed air. The Oxy-Gasoline Torch burns at a

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temperature of over 5,000 degrees F and the force of the expanding gasoline flame allows for cutting under adverse conditions (dirty, rusty, cement coatings or backing, stacks of deformed plate, 5 percent chrome steel, 9 percent nickel steel, etc.). The torch has been demonstrated as a hand-held torch with a 2.5-gallon gasoline tank and a manifold tank system for the liquid oxygen and is also available as a machine torch which can be mounted on track machines, pipe cutters, and rail cutters.

**Point of Contact** Heft, Milt  
**Role** Vendor  
**Affiliation** Petrogen International  
**Phone** 510-237-7274

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**Title** Paint Scaler  
**Technology ID** 2952  
**Description** The Bosch Rotary Hammer Drill (Paint Scaler) can collect paint samples quickly and efficiently for lab analysis. It is ultra-compact, lightweight with an ergonomic balanced grip. The battery operation gives the operator more flexibility during sampling activities.

**Point of Contact**  
**Role**  
**Affiliation**  
**Phone**

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**Title** Passive Tritium Air and Surface Monitor  
**Technology ID** 2957  
**Description** NA  
**Point of Contact**  
**Role**  
**Affiliation**  
**Phone**

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**Title** PCB Analyzer  
**Technology ID** 2398  
**Description** The SPECTRO XEPOS X-ray Fluorescence (XRF) analyzer, a Germany technology, uses polarized X-ray fluorescence (XRF) spectrometry to detect elements from sodium to uranium. The XEPOS was also used to detect PCB by using the presence of chlorine ions (Cl<sup>-</sup>) as an indicator of the possible presence of PCB. The XEPOS provides simultaneous determination of the elements present in a single measurement that varies from 3 to 10 minutes in length depending upon the data quality objectives. The results can be printed

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or saved to an electronic file for later use. The system can be set up with multiple internal reference standards that are matrix-matched for various media, thus minimizing the need for repetitive calibration.

#### Point of Contact

**Role**

**Affiliation**

**Phone**

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**Title**

**Technology ID**

**Description**

Personal Ice Cooling System (PICS)

1898

Self-contained core body temperature control system that uses tap water ice as a coolant and circulates that coolant through tubing incorporated into a durable and comfortable shirt or vest. Water is frozen in bottles that are worn outside of Anti-Cs in a sealed, insulated bag. These are then incorporated with a circulating pump which are both attached to a comfortable support harness system. The rate adjustable, battery powered pump circulate the coolant via an umbilical cord with an Anti-Cs pass through connector which is connected to the tubing in the garment. Rate adjustment allows worker to adjust cooling based on work load or personal preference. The total weight of the system with a two liter bottle of frozen water is 13 pounds. The shirt or vest would be worn under the first layer of Anti-Cs, remain uncontaminated and allow reuse. As such, normal laundering could be used to allow for ready reuse. The external components of the shirt or vest, such as the harness, bottle, pump, and insulating bag, can remain in the contaminated area until the work is complete.

**Point of Contact**

**Role**

**Affiliation**

**Phone**

Burns, Keith

Vendor

DELTA TEMAX, Inc.

613-735-3996

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**Title**

**Technology ID**

**Description**

Pipe Crawler Internal Piping Characterization System

1810

Pipe Crawler technology consists of a wheeled robot, or mule, on which is mounted an array of thin G-M detectors. The crawler is manually transported through pipes using flexible fiberglass rods. If piping systems are accessible from both ends, up to 200 feet of pipe, including multiple bends, can be surveyed. Crawlers have been build for pipes as small as 2 inch to as large as 18 inch internal diameter.

**Point of Contact**

**Role**

**Affiliation**

**Phone**

McCleer, James

Vendor

Radiological Services, Inc.

860-443-4944

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<b>Title</b>	Pipe Cutting and Crimping System
<b>Technology ID</b>	2955
<b>Description</b>	The Burndy Lightweight Portable Crimper is an AC powered hydraulically assisted crimping tool. The crimper head weighs less than 8 lbs. and connects to the end of a 25 ft. hose. The cart-mounted pump enables the entire unit to easily move between job sites and provides sufficient hose to reach tubing in high bay areas. The unit delivers 12 tons of force and 10K psi to the crimping die. A standard die was modified for this project by installing two parallel dowels in the die, set at a right angle to the tube selected for crimping. This modification directed the crimping force to the dowels, and provided the tight seal crucial for this application. A battery powered unit with a shorted hose is also available, in addition to a manual crimper that typically requires 35-50 strokes to reach the 10,000 psi pop-off pressure.

**Point of Contact**  
**Role**  
**Affiliation**  
**Phone**

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<b>Title</b>	Pipe Explorer (TM) System
<b>Technology ID</b>	74
<b>Description</b>	The Pipe Explorer system transports various characterizing sensors into piping systems that have been radiologically contaminated. The Pipe Explorer system provides an air-tight membrane, which is initially spooled inside a canister. The end of the membrane protrudes from the canister and attaches to the pipe being inspected; the other end of the tubular membrane is attached to the tether and characterization tools. Pressurizing the canister inverts and deploys the membrane inside the pipe. The characterization detector and its cabling is attached to the tethered end of the membrane. As the membrane is deployed, the detector and its cabling is towed into the pipe inside the protective membrane; measurements are taken from within the protective membrane. The process is reversed to retrieve the characterization tools. The Pipe Explorer can be deployed through constrictions in the pipe, around 90 bends, vertically up and down, and in slippery conditions. The detector is protected from contamination inside the membrane. Sensors demonstrated include: gamma detectors, beta detectors, video cameras, and pipe locators. Alpha measurement capability has been developed and will be demonstrated soon. The system is capable of deploying in pipes as small as 2-in. diameter and up to 250-ft long.

**Point of Contact** Cremer, David  
**Role** Vendor  
**Affiliation** Science & Engineering Associates, Inc.  
**Phone** 505-884-2300

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<b>Title</b>	Piping Inspection
<b>Technology ID</b>	1811
<b>Description</b>	Two separate technologies internal piping inspection and characterization technologies. The Visual Inspection Technologies system incorporates a high resolution color camera with recording equipment. The Radiological Services system uses both video and radiological detectors. Both systems are manipulated manually through pipe sections.
<b>Point of Contact</b>	Adams, Jim
<b>Role</b>	Vendor
<b>Affiliation</b>	Visual Inspection Technologies, Inc.
<b>Phone</b>	973-448-0077

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<b>Title</b>	Portable Concentrator for Processing Plutonium Contaminated Solutions
<b>Technology ID</b>	1454
<b>Description</b>	Concentrator unit in a self-contained glovebox that can process solutions generated from flushing plutonium-recovery equipment. This system capable of handling acidic and basic solutions and slurries with plutonium concentrations ranging up to 100 grams per liter. A highly decontaminated distillate stream and a high-solid-content stream is generated.
<b>Point of Contact</b>	Chamberlain, David B.
<b>Role</b>	PI
<b>Affiliation</b>	Argonne National Laboratory
<b>Phone</b>	630-252-7699

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<b>Title</b>	Portable Scintillation Counter
<b>Technology ID</b>	2311
<b>Description</b>	The Lumi-Scint Portable Liquid Scintillation Counter is a portable, single-tube liquid scintillation counter that can measure the low-energy beta radiation from tritium in a field swipe. It uses a single photomultiplier tube and manual sample chamber. It can be run on internal battery or 110 VAC.
<b>Point of Contact</b>	Schulman, Seth
<b>Role</b>	non Vendor
<b>Affiliation</b>	Bio Scan
<b>Phone</b>	800-255-7226

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<b>Title</b>	Portable Sensor for Hazardous Waste
<b>Technology ID</b>	31
<b>Description</b>	Compact, portable, real-time, analytical instrument based on the principle of

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active-nitrogen-energy-transfer technique to quantify concentrations of hazardous components, including polychlorinated and nonchlorinated hydrocarbons; transuranics; uranium; thorium; and heavy metals, including mercury, chromium, cadmium, arsenic, and lead. Contaminated samples are prepared and injected into a stream of active nitrogen, which causes fluorescence to occur. This fluorescence is detected conventionally, using simple optical detectors.

**Point of Contact** Piper, Lawrence  
**Role** Vendor  
**Affiliation** Physical Sciences, Inc.  
**Phone** 508-689-0003

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**Title** Portable X-Ray Fluorescence Spectrometer  
**Technology ID** 1790  
**Description** The portable Spectrace 9000 unit (TN Spectrace) provides for non-destructive, real-time elemental analysis for solid, liquid, thin film, and powder samples. The system collects x-ray emission spectra from a sample after excitation with one or more radiation sources. The system analyzes elements of atomic number 11 and higher, at concentrations from a few parts per million to percent levels. A demonstration has used X-ray fluorescence (XRF) equipment with traditional portable radiation detection equipment to test an improved characterization approach.

**Point of Contact** Harding, Tony  
**Role** Vendor  
**Affiliation** TN Spectrace Instruments  
**Phone** 970-207-1618

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**Title** Portable X-Ray, K-Edge Heavy Metal Detector  
**Technology ID** 134  
**Description** The K-edge technique provides an improved method for detection and quantification of heavy metals, such as Hg, U, Pu, located inside containers and equipment. An X-ray transmission measurement of the K-shell absorption edge of these materials is implemented in this task. This method provides accurate quantification of these elements regardless of container material and geometry. Typical accuracy of 10% for 10 mg/sq-cm of heavy metals in one inch of steel (100 ppm) is achievable.

**Point of Contact** Gray, Joe  
**Role** PI  
**Affiliation**  
**Phone** 515-294-9745

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<b>Title</b>	Protective Clothing Based on Permselective Membrane and Carbon Adsorption
<b>Technology ID</b>	95
<b>Description</b>	Improved protective clothing that provides personnel protection equivalent to current garments, but is water-vapor permeable to minimize heat stress, and lighter weight for improved wearer comfort. The improved protective clothing is made of an innovative fabric that combines an ultrathin, permselective outer membrane with a sorptive inner layer. The outer membrane layer is extremely permeable to water, but highly impermeable to hazardous compounds; the sorptive inner layer captures any hazardous compounds that may breach the membrane layer.
<b>Point of Contact</b>	Gottschlich, Douglas
<b>Role</b>	Vendor
<b>Affiliation</b>	Membrane Technology & Research, Inc.
<b>Phone</b>	415-328-2228

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<b>Title</b>	Quantrad Scout Gamma Spectroscopy System (2960)
<b>Technology ID</b>	2960
<b>Description</b>	The Quantrad Scout is a lightweight, portable system that provides gamma-ray and spectral gamma radiation characterization data. the system consists of three parts; the Scout base, a palmtop computer, and a probe. The Scout base includes a 512-channel Multi-Channel Analyzer (MCA), a high voltage power supply, and memory circuitry for storing spectra data. The palmtop computer provides an interface to the MCA unit. A number of different probes can be used with the Scout base. The system is small and durable and can operate using a transformer or a 12-volt battery.
<b>Point of Contact</b>	
<b>Role</b>	
<b>Affiliation</b>	
<b>Phone</b>	

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<b>Title</b>	Rapid Surface Sampling and Archive Record (RSSAR) System
<b>Technology ID</b>	96
<b>Description</b>	An that can sample concrete and steel surfaces in order to provide a near real-time, quick-look measurement for the presence or absence of semi-volatile organic contaminants. Has the capability to trap up to 50 separate samples in a convenient manner and transfer them to a modified, commercially available, thermal-desorption autosampler for subsequent analysis.
<b>Point of Contact</b>	Sheldon, Richard
<b>Role</b>	PI

## Appendix E

### Accepted OST Technologies

**Affiliation**  
**Phone** 518-387-6565

**Title** Reactor Surface Contamination Stabilization (Reactor Stabilizer)  
**Technology ID** 1839  
**Description** Two improved technologies for coating of surfaces to prevent the spread of removable contaminants. RedHawk coating consists of two layers, 1) a polyurethane foam base layer, which is covered by 2) a polyurea film cover (finish). Redhawk coating applicator consists of a Gusmer Model H-3500 high pressure proportioner that controls the mixture of the coating compounds and a Gusmer Model No. GX-7 spray gun for spraying the coatings onto the surfaces. The same units are used for spraying polyurethane foam and polyurea film onto the surfaces. Master-Lee coating consists of a polyurea film cover. Master-Lee coating applicator consists of a modified Gusmer Model H-2000 high pressure proportioner that controls the mixture of coating compounds and a Gusmer Model No. GX-7 spray gun for spraying the coating onto the surfaces. Coatings were prepared by mixing two different compounds before the application. The proportion of the compounds are controlled at the high pressure proportioner and delivered to the spray gun via two different hoses.  
**Point of Contact** Azure, Marc  
**Role** Vendor  
**Affiliation** RedHawk Environmental  
**Phone** 509-946-8608

**Title** Real-Time Surface Tritium Monitor  
**Technology ID** 2933  
**Description** NA  
**Point of Contact**  
**Role**  
**Affiliation**  
**Phone**

**Title** Remote Concrete Coring  
**Technology ID** 2329  
**Description** No description of specific technology is available.  
**Point of Contact**  
**Role**  
**Affiliation**  
**Phone**



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<b>Title</b>	Remote Control Concrete Demolition System
<b>Technology ID</b>	2100
<b>Description</b>	Brokk BM 150 uses a remote operated articulated hydraulic boom with various tool head attachments to perform demolition/dismantlement. The machine is designed primarily to drive a hammer and has a reach of fifteen feet. The Brokk can be operated 400 feet away or in a different room with a TV monitor. The machine can be operated up to a 30 degree gradient. The unit requires a 480 volt, 50 amp circuit for it's power source. Two attachments were used in this demonstration. The hydraulic hammer and the excavating bucket. The hammer operates at 600 foot pounds and has outputs of 1000 to 1500 beats per minute. The bucket had a capacity of 1/4 cubic yard and had a smooth cutting edge. Other attachments available include a concrete crusher, a La Bounty Shear, and a 1/4 yard clamshell bucket.
<b>Point of Contact</b>	Duane, Toby
<b>Role</b>	Vendor
<b>Affiliation</b>	Duane Equipment Corp.
<b>Phone</b>	888-273-2511

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<b>Title</b>	Remote Surveillance of Facilities Awaiting D&D
<b>Technology ID</b>	2377
<b>Description</b>	The purpose of this three-year Florida International University Hemispheric Center for Environmental Technology (FIU-HCET) investigation (initiated in FY98) is to develop a remote surveillance system to monitor the facilities, which are closed and are awaiting decontamination and decommissioning. Such a system should provide continuous and inexpensive monitoring of the facility and reduce the need for labor-intensive and hazardous surveys. The system will be capable of collecting data from a DOE site (remote station) and transmitting the data to a central location (base station). The type of data collected will depend on the site-specific needs. From discussions held with DOE management and operations contractor personnel from Hanford, the SRS, and Lockheed Martin Idaho Technology Company (LMITCO), it was learned that most of the sites are in need of monitors for water level, water from leaky roofs, temperature, humidity, air activity, and gamma radiation. An outline of the remote surveillance system was made. The system consists of sensors of various parameters to be monitored, data collection and transmission modules (data-logger, RF module, and RF transmitter or a telemetry system and a transceiver at the base station with computer for display, storage, and retrieval of data). Since the closed sites may not have main power supplies, an alternative method of solar-powering the system was considered.
<b>Point of Contact</b>	
<b>Role</b>	
<b>Affiliation</b>	
<b>Phone</b>	

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<b>Title</b>	Remote Underwater Characterization System (RUCS)
<b>Technology ID</b>	2151
<b>Description</b>	An underwater characterization system to perform tasks such as small parts retrieval and sampling. Based on a small, commercially-available submersible vehicle approximately 12 inches long, 9 inches wide, and 6 inches tall. The small size of the vehicle allows it to operate in areas where access is tight or where maneuvering room is limited. The vehicle has underwater lights, a front color camera, a rear black and white camera. It is operated over a 125' neutrally buoyant tether and is capable of operating at depths up to 100 feet. Features include: on-board compass, a depth sensor, and a gamma radiation detector, auto-depth' control feature to allow the vehicle to 'hover' at a user-selected depth. Two variable-speed horizontal thrusters provide for forward and backward motion as well as steering via a joystick control on the operator console. The vehicle will float to the surface in the event power is lost. A single vertical thruster is used to drive the vehicle to depth. The system is controlled through microprocessors (one on the vehicle and one in the control station) via RS-485 serial communication.
<b>Point of Contact</b>	Knight, Terry
<b>Role</b>	Vendor
<b>Affiliation</b>	Inuktun Services, Ltd.
<b>Phone</b>	360-650-0460

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<b>Title</b>	Remote/Robotic Size Reduction System
<b>Technology ID</b>	2916
<b>Description</b>	The Remote/Robotic Size Reduction System is a vendor-fabricated, self-contained, "turn-key" system into which tanks and gloveboxes can be moved. State-of-the-art cutting devices will be used that can be controlled remotely or operated robotically (e.g., saws, nibblers, shears, or more advanced technologies such as plasma arc, laser or OXY-gasoline cutters). The system includes a containment structure housing the size reduction equipment with filtration and ventilation capability; a staging area outside the containment structure for feeding equipment to the containment area and to hold waste containers; the size reduction station inside the containment equipped with automatic cutting devices; and, a waste packaging station for loading, weighing, and sealing waste containers.
<b>Point of Contact</b>	
<b>Role</b>	
<b>Affiliation</b>	
<b>Phone</b>	

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### Accepted OST Technologies

<b>Title</b>	Remotely Operated Scabbling
<b>Technology ID</b>	2099
<b>Description</b>	Pentek, Inc.'s remotely operated scabbling technology, MOOSE, designed to scarify large concrete floors and slabs. The MOOSE scabber is comprised of three intergral sub-systems: the scabbling head assembly, the on-board HEPA vacuum system, and the six-wheeled chassis. The scabbling head houses seven independent reciprocating tungsten carbide-tipped bits with the pistons being driven by compressed air. Dust and debris are captured by the two-stage positive filtration HEPA vacuum system that deposits the waste directly into an on-board 23-gallon waste drum. Independent skid steering allows the MOOSE to pirouette 360 degrees about its geometric enter.
<b>Point of Contact</b>	Lukart-Ewansik, Linda
<b>Role</b>	Vendor
<b>Affiliation</b>	Pentek, Inc.
<b>Phone</b>	412-262-0725

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<b>Title</b>	Removal of Contaminants from Equipment and Debris, and Waste Minimization Using TECHXTRACT
<b>Technology ID</b>	1450
<b>Description</b>	TECHXTRACT is a proprietary chemical decontaminationn technology employing as many as 25 different chemical components in three separate formulations that are used in sequence to extract contaminants.
<b>Point of Contact</b>	Fay, Scott
<b>Role</b>	Vendor
<b>Affiliation</b>	Active Environmental Technologies
<b>Phone</b>	609-702-1500

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<b>Title</b>	Removal of Radiological Contaminants from Nickel Scrap
<b>Technology ID</b>	965
<b>Description</b>	Integrated process for removal of radiological contaminants on nickel scrap that will be removed from the Gaseous Diffusion Plants to allow recycle.
<b>Point of Contact</b>	Hayden, Wayne H.
<b>Role</b>	PI
<b>Affiliation</b>	Lockheed Martin Energy Systems
<b>Phone</b>	865-574-6936

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<b>Title</b>	Reuse of Concrete from Contaminated Structures
<b>Technology ID</b>	210
<b>Description</b>	Paper study analyzing the current and proposed disposition of the large quantities of contaminated concrete resulting from the environmental

## Appendix E

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restoration of the Departments nuclear facilities. Study includes four areas: economic analysis, legal/regulatory consideration, environmental risk assessment, and social/political implications.

**Point of Contact** Parker, Frank  
**Role** PI  
**Affiliation**  
**Phone** 865-343-2371

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**Title** Robot Task Space Analyzer  
**Technology ID** 2171  
**Description** A collection of software processes running on a computer in the operator's console and linked to physical devices on the remote worksystem. The RTSA combines laser and stereo imaging, human-interactive modeling, and semi-automatic object recognition to build a 3-D model of the work zone in which a robot system is operating.

**Point of Contact** Bedick, Robert  
**Role** EM Product Manager  
**Affiliation** NETL  
**Phone** 304-285-4505

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**Title** Robotic End Effector for Inspection and Sampling of Storage Tanks  
**Technology ID** 278  
**Description** Teleoperated robot deployed tool used to assess the structural integrity of waste storage tanks. System is deployed through the tank riser access holes and uses non-destructive evaluation (NDE) in conjunction with a simultaneous visual examination by the operator. The Robotic Tank Inspection End Effector (RTIEE) system combines an electromagnetic NDE technique, Alternating Current Field Measurement (ACFM), with a compact vision and lighting system to enable the operator to distinguish potential corrosion sites before approaching the tank wall for a detailed NDE. The system works with both carbon and stainless steels. The RTIEE can be used to inspect large areas of a tank wall by translating, or 'flying', it across the surface. The current capability is to detect a fatigue crack while flying at 1 inch/sec with a 1 inch standoff. For detailed quantified inspections, the RTIEE scanning head is positioned against the tank wall and remains stationary during the NDE. All data is logged electronically and tied to the manipulator position data. A full record of current and previous inspections is kept as a 'Tank Wall Map'. The operator is provided with both live video and the results of the ACFM inspection on the same monitor. The ACFM appraisal of the wall is presented as a two dimensional false color plot indicating defect position and size.

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**Point of Contact**  
**Role**  
**Affiliation**  
**Phone**

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**Title** Robotic Platform for B-Cell Cleanout  
**Technology ID** 2919  
**Description** Deployed from an overhead crane, the robotic platform will be fitted with end effectors of sufficient length and dexterity to reach all interior surfaces of a hot cell, including the ceiling. It will be designed to operate with a variety of end effectors such as shears, cutoff saws, decontamination spray heads, and detectors for characterization.

**Point of Contact**  
**Role**  
**Affiliation**  
**Phone**

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**Title** Robotic Vacuum - Deployed Wall Scabbler / Detector  
**Technology ID** 2321  
**Description** No description of specific technology is available.  
**Point of Contact** Nick, DiMascio  
**Role** Vendor  
**Affiliation** Bartlett Services, Inc.  
**Phone** 508-746-6464

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**Title** Robotics Crawler  
**Technology ID** 2328  
**Description** No description of specific technology is available.  
**Point of Contact**  
**Role**  
**Affiliation**  
**Phone**

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**Title** Rocky Flats D&D Initiative - Central Size Reduction Facility  
**Technology ID** 2918  
**Description** A centralized, automated size reduction and packaging process, based on commercially available components, for actinide contaminated gloveboxes, tanks and other equipment will be developed and deployed. The process will

## Appendix E

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be designed to minimize direct worker exposure, minimize power requirements, and maximize throughput.

**Point of Contact**  
**Role**  
**Affiliation**  
**Phone**

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<b>Title</b>	Rotary Peening with Captive Shot
<b>Technology ID</b>	1812
<b>Description</b>	Rotary Peening with Captive Shot uses heavy duty roto peen flaps to remove concrete and coatings from concrete floors. The flaps have been used on an EDCO model CPM-4 floor unit. This proprietary system will shut off electrical power to the concrete planer should the detected vacuum drop below a safe threshold. Captive tungsten carbide shot, supported on flexible flaps, is rotated against the contaminated surface, mechanically fracturing coatings. The particles removed are simultaneously collected in a drum by a vacuum system (VAC-PAC provided by Pentek, Inc.) fitted with High Efficiency Particulate Air (HEPA) filter.
<b>Point of Contact</b>	Fritz, Peter
<b>Role</b>	Vendor
<b>Affiliation</b>	3M
<b>Phone</b>	612-736-3655

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<b>Title</b>	ROTO PEEN Scaler and VAC PAC System
<b>Technology ID</b>	1943
<b>Description</b>	Hand-held milling technology for removing contaminated coatings on concrete and steel located on floors, walls, ceilings, and structural components. Scaler is equipped with 3M Heavy Duty Roto Peen Flaps, each studded with rows of tough tungsten carbide cutters and mounted on a rotating hub. The debris removed by the ROTO-PEEN scaler is simultaneously collected in a VAC-PACR, High Performance HEPA Vacuum/Drumming System.
<b>Point of Contact</b>	Fuller, Brad
<b>Role</b>	Vendor
<b>Affiliation</b>	Pentek, Inc.
<b>Phone</b>	412-262-0725

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<b>Title</b>	Sealed-Seam Sack Suit
<b>Technology ID</b>	1954
<b>Description</b>	Six different innovative personal protective clothing for contamination

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protection, safety, and comfort. The suits include: Comfort Guard 150, FRHAM Kool Suit, Kappler ProShield I and ProShield II, Kappler NuFab, and Kappler Tyvek Copiah Creek (cotton baseline).

**Point of Contact** Rehn, Rick  
**Role** Vendor  
**Affiliation** L. L. Safety West  
**Phone** 509-659-1811

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**Title** SEG Recycle and Reuse of Radioactively Contaminated Scrap Metal  
**Technology ID** 1595  
**Description** Scrap metal decontamination and recycling process employing smelting, casting into ingots, and shipping to a commercial rolling mill to be reformed. The sheet stock will be fabricated into containers such as strong tight boxes and other containers for DOE contaminated waste.

**Point of Contact** Reno, Chris  
**Role** Vendor  
**Affiliation** GTS Duratek  
**Phone** 865-481-0222

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**Title** Segmented Gate System  
**Technology ID** 2158  
**Description** System employs a computer controlled mechanical sorter to separate suspected radioactive contaminated soil into clean and contaminated waste streams. A conveyor belt carries the soil under two banks of sensors that detect radionuclide concentrations above the desired limits based on the specific contaminant and regulatory requirements. This soil is then diverted into a separate waste stream for removal. The SGS is capable of using a variety of sensors required for specific contaminant detection (i.e., sodium iodide, calcium fluoride, or high purity germanium). In applications of the process, a one-half inch to two-inch layer of excavated soil is spread on a 32-inch wide conveyor belt and passed under a bank of sensors to measure localized levels of radionuclides. A computer-controlled mechanical sorter then separates the soil into a clean stream and a contaminated stream. The clean soil stream is diverted for return to the site or other non-controlled use. The contaminated soil is sorted for treatment or disposal at an approved facility.

**Point of Contact** Brown, Jeffrey  
**Role** Vendor  
**Affiliation** Thermo NUtech  
**Phone** 865-481-0683

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<b>Title</b>	Self Assembled Monolayers on Mesoporous Supports for RCRA Metal Removal
<b>Technology ID</b>	1447
<b>Description</b>	<p>A new class of materials for removing mercury and other Resource Conservation and Recovery Act (RCRA) metals from a variety of media, including both aqueous and organic waste. The SAMMS technology integrates mesoporous ceramic materials and self-assembled organic materials. SAMMS is made by closely packing RCRA-metal- specific binding molecules on the surface of a ceramic substrate (i.e., mesoporous silica) with a microscopic honeycomb-like structure that provides a huge surface area. When SAMMS material is exposed to a liquid solution containing mercury, SAMMS quickly binds to nearly all the available mercury in the liquid. It reduces the mercury concentration in the solution to far below drinking water standards (below 10 parts per trillion) with <math>K_d &gt; 10^8</math>. The mercury-laden SAMMS passes the Toxicity Characteristic Leach Procedure (TCLP) and has good long-term durability as a waste form because the durable ceramic matrix and the covalent binding between mercury and SAMMS are resistant to ion exchange, oxidation, and hydrolysis. The bound mercury inside the tiny honeycomb (about 60 Å in size) prevents bacteria (at least 20,000 A.U.) from entering the pores and solubilizing the mercury into extremely toxic and mobile methylmercury. SAMMS materials can be made into filtration membranes and separation columns for large municipal and industrial water recycle and treatment and desalination facilities to remove Hg (including methylmercury), Pb, Cd, and Ag from water.</p>

**Point of Contact**  
**Role**  
**Affiliation**  
**Phone**

<b>Title</b>	Self Contained Pipe Cutting Shear
<b>Technology ID</b>	1948
<b>Description</b>	<p>Lukas model LKE 70 self contained pipe cutting shear that does not require any hydraulic fluid lines. This shear has a built-in accumulator that uses approximately 1 pt of hydraulic fluid. The shear's weight is approximately 50 pounds and is easy to carry and use with the sling provided. Its dimensions are 33.5 inches long, 10.2 inches wide, and 6.8 inches high. It also has a built-in rechargeable battery that allows 0.25 hr of continuous operation. This tool can be attached to a portable, easy to carry external rechargeable battery that allows the user an extended period of operation (approximately 0.5 hr additional).</p>
<b>Point of Contact</b>	Klughart, Chris
<b>Role</b>	Vendor



**Appendix E**  
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**Affiliation** Lukas Rescue Tools  
**Phone** 540-891-6600

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**Title** Size Reduction Machine  
**Technology ID** 2395  
**Description** The Size Reduction and Deployment Shear Platform, manufactured by Utility Engineering, provides a non-robotic, manually moved platform that mounts a hydraulic shear manufactured by Mega-Tech Services, Inc. This platform is a hydraulic/mechanical assist device that takes the weight of the shear off the operator. It is anticipated that it will increase production and provide a much safer means of size-reduction with less fatigue to the operator. The counterweighted platform is moved and positioned manually. This device will be able to shear items from 6 inches below floor level to 15 feet above, and is capable of cutting within 2 inches of a wall or floor surface. Cutting in overhead configurations should require only the use of ladders to assist in positioning the shear head without the need to erect scaffolds. The shear has the capacity to cut stainless steel 3' x 3' angles, 4' schedule 40 pipes, and 3 1/2' by 1/2' SS flat bars. The hydraulic power pack uses standard 110/120 voltage.

**Point of Contact** Stoucky, Jon  
**Role** Vendor  
**Affiliation**  
**Phone** 336-316-0707

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**Title** Small Pipe Characterization System (SPCS)  
**Technology ID** 43  
**Description** System for characterizing contaminants in pipes with internal diameters between two and three inches. The SPCS consists of a control computer, a tether for data communication, and a pipe crawling vehicle. The pipe crawler is driven by a dc-motor-powered wheels arranged in a triangular configuration and sprung against the sides of the pipe for traction. The configuration of the wheels allows the pipe crawler to maneuver through radiused elbows and to adapt to changing pipe diameters "on the fly." Live color video is transmitted from the camera on the front of the pipe crawler to the control computer. The SPCS is also capable of deploying small sensors such as radiation detectors; however, appropriately sized sensors have not yet been developed.

**Point of Contact** Hough, Blair J.  
**Role** Vendor  
**Affiliation** Foster-Miller, Inc.  
**Phone** 617-684-4406

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<b>Title</b>	Soda Blasting Decontamination Process
<b>Technology ID</b>	369
<b>Description</b>	Decontamination process with sodium bicarbonate grit for blasting contaminated materials, and a decontamination process for waste water from the blasting procedure. This decontamination process removes surface contamination, mainly uranium isotopes, technetium-99, and PCBs, on concrete structures and metal equipment. The abrasive blast media, sodium bicarbonate, is water soluble. It can be dissolved for easy cleanup and disposal after the surface has been decontaminated.
<b>Point of Contact</b>	Neubauer, Eric
<b>Role</b>	Vendor
<b>Affiliation</b>	OBrien & Gere
<b>Phone</b>	315-437-6400

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<b>Title</b>	Soft Media Blast Cleaning
<b>Technology ID</b>	1899
<b>Description</b>	Decontamination technology involving the spraying of absorbent sponges on surfaces to capture, absorb and remove surface contaminants such as oils, greases, lead compounds, chemicals and radionuclides. Sponges are approximately 10-15 mm in effective diameter. Sponge blasting controls dust and minimizes waste through effective recycling and media classification. The sponge media is poured into a hopper, metered by an auger feed, blended with air in a mixing chamber and expelled through a standard blast hose and nozzle. The feed unit holds 150 to 200 pounds of sponge media with a continuous blast time of 30 minutes to one hour. Can use non-aggressive or mildly aggressive sponges. Expelled sponges can be recycled by placing them into a patented mechanical sifter to remove contaminant particles and fines. A minimal volume of waste water may be generated during the washing phase of the sponge reconditioning.
<b>Point of Contact</b>	Flaherty, Jim
<b>Role</b>	Vendor
<b>Affiliation</b>	AEA Technology Engineering Service, Inc.
<b>Phone</b>	412-655-6083

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<b>Title</b>	Solid State Pin Diode Direct Reading Surface Tritium Detector
<b>Technology ID</b>	2956
<b>Description</b>	NA
<b>Point of Contact</b>	
<b>Role</b>	
<b>Affiliation</b>	
<b>Phone</b>	

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<b>Title</b>	Specialized Separation Utilizing 3M Membrane Technology
<b>Technology ID</b>	1543
<b>Description</b>	Ion exchange and adsorption membranes for the removal of radioactive contaminants from aqueous waste streams. The membranes, impregnated with ten to thirty micron-sized particles, can be fabricated into cartridges which can be installed in the same vessels used for conventional filters. The cartridges function like columns with very large diameter compared to height.
<b>Point of Contact</b>	Kafka, Tom M.
<b>Role</b>	Vendor
<b>Affiliation</b>	3M
<b>Phone</b>	612-733-8065
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<b>Title</b>	Stabilized Contaminants using Envirocare Polymer Macroencapsulation
<b>Technology ID</b>	30
<b>Description</b>	Macroencapsulation involves heating and pouring low-density polyethylene into a specially designed container partially filled with pieces of a solid, contaminated waste such as lead or debris. The plastic flows around, over, and between pieces of waste, coating and bonding to all surfaces of the waste matrix.
<b>Point of Contact</b>	
<b>Role</b>	
<b>Affiliation</b>	
<b>Phone</b>	
<hr/>	
<b>Title</b>	Stainless Steel Beneficial Reuse
<b>Technology ID</b>	80
<b>Description</b>	This technology melts stainless steel radioactive scrap metal (RSM) for refabrication into metal into storage containers. The RSM to be recycled is type 304 stainless steel, such as heat exchangers, primary piping, damaged water containers, and contaminated transfer equipment. All RSM will qualify as "low specific activity" items, as defined by the U.S. Department of Transportation regulations. The 304 stainless steel finished products will be 100-cubic feet boxes and 55 or 85 gallon drums. Up to 200 tons of RSM will first be processed and packaged at DOE sites. Next, the metal will be shipped to private industry for the melting and fabrication steps. The finished products will be shipped back to the DOE sites for use as containers for long-term, temporary, or above-ground storage of mixed waste, transuranics, or other appropriate materials.
<b>Point of Contact</b>	Brady, Sherman
<b>Role</b>	Vendor

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<b>Affiliation</b>	Carolina Metals
<b>Phone</b>	803-259-2321

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<b>Title</b>	Standard Waste Box Crate Counter
<b>Technology ID</b>	2917
<b>Description</b>	The mobile Standard Waste Box counter will be a self-contained trailer-mounted system that can be easily transported. The system will be based on passive neutron coincidence detection assay technology, which is similar to the technology.
<b>Point of Contact</b>	
<b>Role</b>	
<b>Affiliation</b>	
<b>Phone</b>	

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<b>Title</b>	Standardized Dismantlement System for Decommissioning (PAR)
<b>Technology ID</b>	1475
<b>Description</b>	Remotely operated, retrofit to bridge cranes in reactor vessels.
<b>Point of Contact</b>	Meyer, Rod D.
<b>Role</b>	PI
<b>Affiliation</b>	Rockwell Aerospace Energy Technology Engineering Center
<b>Phone</b>	818-586-5400

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<b>Title</b>	Steam Vacuum Cleaning
<b>Technology ID</b>	1780
<b>Description</b>	Steam/Vacuum cleaning process for the removal of radioactive contamination from equipment. The system directs a wet steam spray against a surface to be cleaned. As the wet steam jet emerges from the nozzle, the superheated liquid flashes, creating a high-velocity jet. The jet nozzle assembly is surrounded by a collection hood. The hood is attached to a powerful vacuum cleaner which effectively pick up the steam and contaminants dislodged by the steam jet. The vacuum is most effective on flat surfaces but hoods with different contours can be used to conform to many surfaces.
<b>Point of Contact</b>	Downing, Acton
<b>Role</b>	Vendor
<b>Affiliation</b>	Container Products Corp.
<b>Phone</b>	910-392-6100

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<b>Title</b>	Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)
<b>Technology ID</b>	1942
<b>Description</b>	The SCM/SIMS is a motorized characterization and data analysis system for surveying contaminated floor and wall surfaces that utilizes a position-sensitive gas-proportional counter (PSPC) to take 400 radiation measurements in an area of 1 sq. meter. Survey data and sample location are logged electronically as well as displayed on an LCD screen for the operator. The data from each survey is analyzed by the SIMS to obtain visual representations of the surfaces surveyed, to generate a data report detailing the actual numerical results, and to overlay the data into a CAD drawing. Demonstrated for alpha, beta, and gamma measurement.
<b>Point of Contact</b>	Shonka, Joseph
<b>Role</b>	Vendor
<b>Affiliation</b>	Shonka Research Associates
<b>Phone</b>	770-509-7606

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<b>Title</b>	Swing-Reduced Crane Control
<b>Technology ID</b>	1815
<b>Description</b>	The swing-reduced control system adjusts the bridge and trolley motion of a crane to limit the induced sway in the load. The system uses AC vector motors and drives in place of the original bridge and trolley AC motors.
<b>Point of Contact</b>	Jones, Michael
<b>Role</b>	Vendor
<b>Affiliation</b>	DAMAS Corp.
<b>Phone</b>	205-290-9000

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<b>Title</b>	System for Tracking Remediation, Exposure, Activities and Materials (STREAM)
<b>Technology ID</b>	1947
<b>Description</b>	Multimedia database system designed to facilitate engineering, planning, operations and waste handling activities associated with Decontamination and Decommissioning projects. STREAM offers a visual and comprehensive legacy document for historical purposes. Site photographs and video footage are cataloged according to physical location, to present a comprehensive view of each sector and room of the facility. Additional photographs and video may be added as work progresses. STREAM permits characterization data to be incorporated both in numeric and graphical form. Characterization maps of sectors and rooms in the facility may be scanned into the system and continually revised as the work progresses. STREAM assists planners and supervisors when selecting operators for specific tasks by providing a list of training requirements for the task and a matrix showing those operators who

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have the required training. STREAM also tracks information about D & D tasks as they are completed, including the number of hours expended, dosages received, materials consumed, equipment used, and waste generated. A comprehensive set of reports and charts are available with which to review up-to-the-minute project status. S

**Point of Contact** Lentz, Roby  
**Role** Vendor  
**Affiliation** Delphinus Engineering, Inc.  
**Phone** 610-874-9160

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**Title** Thermal Conversion of Asbestos  
**Technology ID** 224  
**Description** The Asbestos Conversion System thermally converts the asbestos in asbestos-containing material (ACM) into a totally nonhazardous substance. The ACM is introduced to the process via a mechanical conveyor system. The asbestos drops from the conveyor into a shredder for size reduction to 1-inch diameter or less. From the shredder, the asbestos is introduced into a soak tank of heated, 7 percent borax solution (nonhazardous) and is fed via a dewatering screw press into the rotary hearth furnace. In the furnace, the asbestos is subjected to temperatures of 2,200 degrees Fahrenheit for a period of one hour. The converted asbestos-free material is then removed from the furnace by means of a discharge system where the material drops by gravity into a solids quench tank filled with clean water.

**Point of Contact** Ledford, Robert  
**Role** Vendor  
**Affiliation** Asbestos Recycling, Inc.  
**Phone** 205-575-9700

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**Title** Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)  
**Technology ID** 97  
**Description** The remote system performs rapid in situ analysis of hazardous organic and radionuclide contaminants on structural materials. The 3D-ICAS configuration consists of a mobile sensor platform and a mobile mapper platform that operate in contaminated areas, and an integrated workstation that remains in a safe location.

**Point of Contact** Gallman, Phillip  
**Role** Vendor  
**Affiliation** Coleman Research Corporation  
**Phone** 703-719-9200

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<b>Title</b>	Track Mounted Shear/Crusher
<b>Technology ID</b>	2303
<b>Description</b>	An automated demolition system capable of performing multiple dismantlement and demolition operations using a variety of end-effector tools.
<b>Point of Contact</b>	Keperling, J. W.
<b>Role</b>	Vendor
<b>Affiliation</b>	Tiger Machine Company, Inc.
<b>Phone</b>	513-772-3232

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<b>Title</b>	TRUEX/SREX
<b>Technology ID</b>	347
<b>Description</b>	High level waste tank treatment processes for removing transuranics (TRUEX) and Strontium (SREX). In the TRUEX process, a complexing agent dissolved in organic solvent is contacted with the radioactive tank waste using highly efficient centrifugal contactors. The transuranic elements are extracted into the organic phase and the other waste components remain in the nonsolvent phase. The transuranic elements are stripped from the organic phase, which can be recycled and reused in the process. In the SREX process, crown ether in an organic solvent is used to extract strontium from a tank waste solution. Continuously operated centrifugal contactors are used to perform the extraction similar to the transuranic extraction process.
<b>Point of Contact</b>	Gerdes, Kurt D.
<b>Role</b>	DOE EM-50 Program Manager
<b>Affiliation</b>	DOE EM-53
<b>Phone</b>	301-903-7289

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<b>Title</b>	Urethane Foam Void Filling
<b>Technology ID</b>	1816
<b>Description</b>	Technology for filling vessel void spaces to allow the vessel to withstand the compressive load resulting from the overburden after burial of the vessel. The solid void filling media prevents subsidence of the OSDF cap in the event of vessel failure due to rusting. Two chemicals, FE 800A Polymeric diphenylmethane diisocyanate (MDI), which is the base ingredient, and a second proprietary chemical are mixed together to form polyurethane. The two chemicals are kept separate until they reach the mixing gun from which the mixture is immediately ejected. The two chemical ingredients leave the mixing gun as a liquid stream and shortly thereafter start to expand into a 'foam'. The speed at which the liquid expands to form the foam can be controlled through regulating both the temperature of the two chemical components and their ratio to one another.

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**Point of Contact** Long, Aaron  
**Role** Vendor  
**Affiliation** Urethane Foam Specialists  
**Phone** 740-498-8424

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**Title** VecLoader HEPA Vacuum Insulation Removal  
**Technology ID** 1784  
**Description** Self-contained, trailer mounted, vacuum unit that evacuates asbestos fibers. The HEPA VAC operates at a rate of six to nine tons per hour to transport the asbestos fibers through a flexible, 5-inch diameter, smooth bore suction hose up to distances of 1,000 feet. The fibers are captured in this fully enclosed, negative pressure system and sent into a cyclone separator, where it is bagged directly from the vacuum.

**Point of Contact** Alexander, Brent  
**Role** Vendor  
**Affiliation** Vector Technologies Ltd.  
**Phone** 800-340-3186

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**Title** Vehicle and Cargo Inspection System (VACIS)  
**Technology ID** 2912  
**Description** The Vehicle and Cargo Inspection System (VACIS) is a highly penetrating gamma ray imaging system that provides a means to non-invasively image crate contents prior to crate disassembly. The VACIS unit uses a 1.6 Curie collimated source (Cesium-137) aimed at a linear detector to create an image as the unit passes by the crate. In the demonstrated mobile unit, the source and detector were mounted on a boom truck. As the crate passed between the source and detector, a near real-time composite image of the contents was constructed from the linear image of the VACIS unit's on board computer and recorded on disk.

**Point of Contact** McBee, Chris  
**Role** Vendor  
**Affiliation**  
**Phone** 619-646-9736

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**Title** Vortec Combustion Melter System  
**Technology ID** 68  
**Description** Process utilizing a unique, counter-rotating comustor fitted with a cyclone melter for stabilizing waste streams contaminated with radionuclides and/or hazardous constituents such as heavy metals and organics.



**Appendix E**  
**Accepted OST Technologies**

**Point of Contact** Patten, John S.  
**Role** PI  
**Affiliation** Vortec Corp.  
**Phone** 610-489-2255

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**Title** Waste Inspection Tomography (WIT)  
**Technology ID** 259  
**Description** Trailer-based (mobile), nondestructive evaluation and assay system for inspection of waste drums based on radiographic, tomographic, and spectroscopic principles.  
**Point of Contact** Bernardi, Richard  
**Role** PI  
**Affiliation** Bio-Imaging Research, Inc.  
**Phone** 847-634-6425

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**Title** Water Solidification  
**Technology ID** 2312  
**Description** Waterworks SP-400 is a polymer-based absorbent that can be used to solidify aqueous waste. Benefits include a high liquid to absorbent ratio, no mechanical mixing required to promote the absorption process, little to no volume increase in the waste form after addition of the absorbent, and a very high retention in the form of the gel-like material.  
**Point of Contact**  
**Role**  
**Affiliation**  
**Phone**

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**Title** Water Soluble Chelating Polymers for RCRA Metal Removal  
**Technology ID** 1439  
**Description** Membrane based hybrid technology that combines water-soluble metal-binding polymers with ultrafiltration (Polymer Filtration [tm] to selectively concentrate and recover valuable or regulated Resource Conservation and Recovery Act (RCRA) metal ions from dilute process or wastewaters. The water-soluble polymers have a sufficiently large molecular weight such that can be separated and concentrated using commercially available ultrafiltration technology. Polymer Filtration (PF) uses water-soluble metal-binding polymers to sequester metal ions in dilute solution. Water, small organic molecules, and unbound metals pass freely through the ultrafiltration membrane while concentrating the metal-binding polymer. The polymer can

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be reused after changing the solution conditions to release the metal ions. The metal ions are recovered in concentrated form for recycle or disposal. The water-soluble polymer can be recycled for further aqueous-stream processing. Because the polymers are completely water soluble, they can also be used to decontaminate surfaces and other solid materials.

**Point of Contact**  
**Role**  
**Affiliation**  
**Phone**

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<b>Title</b>	Wireless Remote Monitoring System
<b>Technology ID</b>	2104
<b>Description</b>	Technology that monitors personnel dose and area exposure rate remotely from a predetermined command center located outside radioactively contaminated areas. A host personal computer monitors and records information transmitted from electronic dosimeters and collected by a transceiver base station using RadStar software. A radio transceiving alarming electronic dosimeter, wireless radio components, radiation detector, and a 9-V alkaline battery are contained in a small case worn by personnel. A dosimeter reader reads the dosimeters and resets them after use. The monitor weighs less than 400 g and is designed for gamma detection. Each dosimeter can be preset to alarm at a set point with either an audible alarm or light-emitting diode and will warn both the worker and the base station. Straight line signals can be transmitted over 10,000 ft.
<b>Point of Contact</b>	Emmons, Dana
<b>Role</b>	Vendor
<b>Affiliation</b>	SAIC
<b>Phone</b>	619-646-9830

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<b>Title</b>	Zero Added Waste Cutting, Abrading and Drilling
<b>Technology ID</b>	1709
<b>Description</b>	Adapted waterjet techniques used for surface abrading without the production of secondary waste. Liquid nitrogen is substituted for water and carbon dioxide is substituted for various carbide and oxide abrasives.
<b>Point of Contact</b>	Meyer, Rod D.
<b>Role</b>	PI
<b>Affiliation</b>	ETEC
<b>Phone</b>	818-586-5400

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# **ACCEPTED NON-OST TECHNOLOGIES**

## **APPENDIX F**

## **Appendix F**

### **Accepted Non-OST Technologies**

#### **Technology Information Data Sources**

##### **D&D Tech. Notebook**

A compilation of vendor literature on commercially available domestic and international D&D technologies. The DDFA continues to add to this library through periodic solicitations and direct vendor contacts. Hard copies of vendor literature are available by contacting the respective DDFA Technical Response POC.

##### **D&D Tech. Notebook – ANS Robotics/Remote Systems**

Electronic proceedings from the American Nuclear Society 8<sup>th</sup> International Topical Meeting on Robotics and Remote Systems (Pittsburgh, PA, April, 1999) sponsored by the Robotics and Remote Systems Division of the ANS and the Pittsburgh Section of the ANS. Because of copyright privileges, hard copies may be limited. Please contact the respective DDFA Technical Response POC.

##### **FIU LSDDP TIS**

The Florida International University (FIU) LSDDP Technology Information System (TIS) accessible on the Internet at <http://www.dandd.org/get/default.html>. This searchable database currently provides detailed information on 343 commercial and OST developed D&D technologies (and vendors) reviewed for possible inclusion in one or more of the DDFA LSDDP's.

##### **FIU TIS**

The Florida International University (FIU) Technology Information System accessible on the Internet at <http://www.dandd.org/get/default.html>. This searchable database currently provides detailed information on 1462 commercial and OST developed D&D technologies (and vendors). This database includes the LSDDP technologies.

##### **Miscellaneous**

Data sources not described above. These technologies were added during the Need Technical Response process and reflect personal knowledge by the DDFA Technical Response POC or were advanced by the site user representatives. Information on these technologies can be obtained from the respective DDFA Technical Response POC.

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### Accepted Non-OST Technologies

<b>Title</b>	Aerosol Fog System
<b>Data Source</b>	FIU LSDDP TIS
<b>Description</b>	Fogging uses an aerosol to capture airborne contaminants and fix them to open surfaces. It also fixes settled contaminants, thus preventing the potential for them to become airborne. The aerosol is composed of a proprietary monosaccharide and polysaccharide sticky mist that persists in the applied area for several weeks. The use of fogging allows for safer entry into contaminated areas by D&D workers and minimized the potential for spread of the contamination.
<b>Point of Contact</b>	Koozer, Don
<b>Role</b>	Vendor
<b>Affiliation</b>	
<b>Phone</b>	509-783-3523
<hr/>	
<b>Title</b>	Air Tight Modular Workstation
<b>Data Source</b>	FIU LSDDP TIS
<b>Description</b>	Air tight modular workshop for remotely controlled operations. This technology was developed for use on decommissioning of nuclear installations to shield workers from Alpha.
<b>Point of Contact</b>	
<b>Role</b>	Vendor
<b>Affiliation</b>	Technicatome (France)
<b>Phone</b>	
<hr/>	
<b>Title</b>	Aladin Gamma Camera
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Provides real-time mapping of gamma emissions from a distance.
<b>Point of Contact</b>	Carrerre, Jean-Marie
<b>Role</b>	POC
<b>Affiliation</b>	CEA, France
<b>Phone</b>	4 66796302
<hr/>	
<b>Title</b>	Alpha Beta Particulate (continuous) Monitor
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Model ABPM 302 for continuous monitoring and displaying of radioactive particulate contamination in air. Provides volumetric and cumulated volumetric activity measurements for alpha and beta-gamma, and approximation of gamma absorbed dose rate in air. Features: mobile and portable, alphanumeric display, displays natural and artificial alpha activity, integrated suction pump, ability to monitor at workers face, dynamic compensation for radon daughter products, dynamic gamma compensation,

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### Accepted Non-OST Technologies

static compensation by mechanical collimator, automatic filter advance, compatibility with EDGAR system network or RAMSYS system.

#### Point of Contact

##### Role

##### Affiliation

##### Phone

MGP Instruments

770-432-2744

#### Title

#### Data Source

#### Description

Amandin Surface Counter

D&D Tech. Notebook

Provides simultaneous counting of and discrimination between alpha and beta particles emitted from flat surfaces.

#### Point of Contact

##### Role

##### Affiliation

##### Phone

Carrerre, Jean-Marie

POC

CEA, France

4 66796302

#### Title

#### Data Source

#### Description

Arc Saw

FIU LSDDP TIS

The arc saw is an extension of nonconsumable melting electrode technology. It is a circular, toothless saw blade that cuts any conducting metal without physical contact with the workpiece. The cutting action is achieved by maintaining a high-current electric arc between the blade and the material being cut. The blade can be made of any electrically conductive material with equal success.

#### Point of Contact

##### Role

##### Affiliation

##### Phone

Leland, Leroy

Vendor

Retech, Inc.

707-462-6522

#### Title

#### Data Source

#### Description

Area Monitor Probe (high-range GM probe)

D&D Tech. Notebook

Model AMP-100 GM Tube-base rate meter for specific use to replace electronic dosimeters in high dose rate (>200 R/hr) fields or where accumulated dose would exceed 50,000 Rads. Provides real time monitoring and remote deployment of probe at distances of 25 to 200 feet from electronics. Features include digital display for direct reading or RS-232 for connection to area monitor or WRM transmitter. Waterproof detector housing for underwater applications. High range response from 10 mR/hr to 1000 R/hr.

#### Point of Contact

##### Role

##### Affiliation

##### Phone

MGP Instruments

770-432-2744

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### Accepted Non-OST Technologies

<b>Title</b>	ARTISAN (heavy duty hydraulic manipulators)
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	ARTISAN is a long reach, heavy duty manipulator suitable for a variety of tasks in harsh environments
<b>Point of Contact</b>	
<b>Role</b>	Vendor
<b>Affiliation</b>	AEA Technology Engineering Service, Inc.
<b>Phone</b>	
<hr/>	
<b>Title</b>	Autonomous Robotic Inspection Experimental System (ARIES)
<b>Data Source</b>	D&D Tech. Notebook - ANS Robotics/Remote Systems
<b>Description</b>	ARIES, a mobile robot inspection system, was developed to assist human inspectors in the routine, regulated inspection of radioactive waste stored in drums. Steel drums containing waste are placed on pallets and stacked forming columns of drums ranging in height from one to five drums. The inspection system makes decisions about the surface condition of the drums and maintains a database of information about each drum. ARIES will locate and identify each drum, characterize relevant surface features (such as paint blisters, dents, rusted areas, and tilting), and update a database containing inspection information.
<b>Point of Contact</b>	Pettus, Robert O.
<b>Role</b>	
<b>Affiliation</b>	University of South Carolina
<b>Phone</b>	803-777-4195
<hr/>	
<b>Title</b>	Autowash/drier Unit
<b>Data Source</b>	FIU LSDDP TIS
<b>Description</b>	Purpose built semi-automatic decontamination facility for small items requiring cleaning. It uses cold water (at present) and consists of a roller conveyor, wash cabinet, drier unit, and monorail.
<b>Point of Contact</b>	Cross, Jim
<b>Role</b>	Vendor
<b>Affiliation</b>	BNFL
<b>Phone</b>	703-385-7100
<hr/>	
<b>Title</b>	B-1000 Supercompactor
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Compactor that produces crushing force exceeding 10,000,000 pounds and attainment of absolute density for the compacted material. Special stainless steel air evacuation/filtration enclosure to prevent exposure to moving parts and possible contaminants. Accepts items up to size of 55 gallon drum.

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<b>Point of Contact</b>	Downing, Acton
<b>Role</b>	
<b>Affiliation</b>	Container Products Corp.
<b>Phone</b>	910-392-6100

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<b>Title</b>	BD250 Dexterous Arm
<b>Data Source</b>	D&D Tech. Notebook - ANS Robotics/Remote Systems
<b>Description</b>	This is a new general purpose nuclear manipulator designed for remote teleoperation and robotics applications in nuclear fuel facilities. It is based on an innovative lightweight mechanical design, with a 7 degrees of freedom kinematics and force-feedback capability. A computer-based teleoperation controller provides the overall telerobotics and robotics functions necessary to perform any teleoperation task in an hostile environment.
<b>Point of Contact</b>	Desbats, Philippe
<b>Role</b>	
<b>Affiliation</b>	Atomic Energy Commission
<b>Phone</b>	33 1 46 54 75 80

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<b>Title</b>	Beta Contamination Detector with High Gamma Filtration/Rejection
<b>Data Source</b>	FIU LSDDP TIS
<b>Description</b>	These are large area beta scintillation detectors with a low background response. They have an application at all of the INEEL facilities. These detectors are generally not comparable with rate meters and scalers from other manufacturers, and as such much can be obtained with the red out device. There is an alternative gamma background rejection technique which is simila to what is used for low background laboratory gas proportional detectors, I.e. use of a quard detector ith anti-coincidence logic. However, none of the manufacturers has anything that can be tested at this time.
<b>Point of Contact</b>	Marlowe, Gail
<b>Role</b>	Vendor
<b>Affiliation</b>	
<b>Phone</b>	440-248-7460

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<b>Title</b>	Betonamist
<b>Data Source</b>	FIU LSDDP TIS
<b>Description</b>	Non-explosive cracking agent, pours into holes placed into concrete, as it dries, it expands and cracks the concrete.
<b>Point of Contact</b>	Richle, Dick
<b>Role</b>	Vendor
<b>Affiliation</b>	Janell, Inc.
<b>Phone</b>	513-489-9111

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### Accepted Non-OST Technologies

<b>Title</b>	Cavity Plus Decon System
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Cavity decontamination system employing “long rach cavity wall tool” that operates from floor using handrail. Operating pressures up to 1000 psi and water temperatures of 230 F. High efficiency vacuum operates at 230 cfm at 8” Hg. Can use other lightweight spray/vacuum tools.
<b>Point of Contact</b>	Downing, Acton
<b>Role</b>	
<b>Affiliation</b>	Container Products Corp.
<b>Phone</b>	910-392-6100

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<b>Title</b>	CD-1000 Concentrate Dryer System
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Concentrate Dryer System is a mobile processing and volume reduction system for water based radioactive waste material that utilizes a low-temperature, vacuum based, high agitation, batch drying (150 gallon) method to remove water. Volume reduction is achieved by producing a dry product representing the solids content of the waste feed stream. Patented system for agitation produces high heat transfer and uniform product which can be a granular solid or a salt block waste form. The system is compatible with various waste containers including 55 gallon drums, steel liners, and overpacks to 200 cubic foot high integrity containers (HIC), plus a NUKEM certified high density waste material container with a payload up to 16,000 pounds.
<b>Point of Contact</b>	
<b>Role</b>	
<b>Affiliation</b>	NUKEM Nuclear Technologies
<b>Phone</b>	803-731-1588

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<b>Title</b>	Cesium solution flush
<b>Data Source</b>	Rocky Flats
<b>Description</b>	This technology has been used in past tank cleaning, often with other solutions,e.g.nitric acid. It is typically followed by an evaporation process to minimize waste volume. It could be used to decontaminate the tank sufficiently to reduce worker exposure.
<b>Point of Contact</b>	Young, Daniel B.
<b>Role</b>	
<b>Affiliation</b>	RIO Technical Services, Inc.
<b>Phone</b>	304-285-4039

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### Accepted Non-OST Technologies

**Title** Champion Shears  
**Data Source** LSDDP (SRS)  
**Description** Mechanical shear end effectors used in conjunction with the Size Reduction Machine at SRS LSDDP 321-M deactivation  
**Point of Contact**  
**Role**  
**Affiliation**  
**Phone**

**Title** Circumspector  
**Data Source** D&D Tech. Notebook  
**Description** A versatile articulated camera for confined or difficult to access areas.  
**Point of Contact** Knight, Terry  
**Role**  
**Affiliation** Inuktun Services, Ltd.  
**Phone** 360-650-0460

**Title** CO2 Pellet Cleaning  
**Data Source** D&D Tech. Notebook  
**Description** Surface cleaning/coating removal system using propelled CO2 pellets. Used for removal of grease, paint, epoxies, and mixed materials. Pellets evaporate, eliminating secondary waste stream.  
**Point of Contact**  
**Role**  
**Affiliation** Knight Armour, Inc  
**Phone** 303-292-9112

**Title** Coating Softening Process (CO2 Blasting)  
**Data Source** FIU LSDDP TIS  
**Description** Environmental Alternatives, Inc. (EAI), offers a proprietary process used in conjunction with CO2 blasting to remove surface coatings, old paints and construction materials, that may contain hazardous materials such as PCBs, lead, chromium, and radioactive materials. One of the complaints associated with the CO2 blasting process is that surface coating removal rates can be rather slow. In order to facilitate removal and improve the strip rate, EAI has developed a topical applicant that serves as a paint softener and bond release agent. The applicant is safe to use, nonhazardous, and environmentally friendly. The softening agent is applied to the surface prior to CO2 blasting. The resulting paint chips are then collected without the additional burden of any secondary wastes.  
**Point of Contact** Martin, Randy  
**Role** Vendor

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### Accepted Non-OST Technologies

<b>Affiliation</b>	Environmental Alternatives
<b>Phone</b>	603-256-6440
<hr/>	
<b>Title</b>	Containment Sheeting
<b>Data Source</b>	FIU LSDDP TIS
<b>Description</b>	Reinforced, reusable plastic sheeting for constructing containments (tenting). Very durable, being able to withstand winds to 100 mph.
<b>Point of Contact</b>	Hawes, Ray
<b>Role</b>	Vendor
<b>Affiliation</b>	Monarflex, Inc.
<b>Phone</b>	800-225-7704
<hr/>	
<b>Title</b>	CORD-UV
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	The Chemical Oxidation Reduction Decontamination (CORD) process for nuclear facility cleaning. Allows controlled substrate attack. Features include multi-phase chemical processing, closed-circuit operation, in-situ regeneration of decontamination chemicals, continuous removal of contaminants on ion-exchange resins, breakdown of decontamination chemicals to carbon dioxide and water using ultraviolet (UV) light, and on-line monitoring of physical and chemical process parameters.
<b>Point of Contact</b>	
<b>Role</b>	
<b>Affiliation</b>	DETEC Decommissioning Technologies GmbH
<b>Phone</b>	060 23-91-04
<hr/>	
<b>Title</b>	Decoha Pipe Decontamination
<b>Data Source</b>	FIU LSDDP TIS
<b>Description</b>	Acid etch of metal pipe using proprietary Decoha process. Removes internal contamination using (HBF <sub>4</sub> ) FluoroBoric acid.
<b>Point of Contact</b>	Ferguson, Steve
<b>Role</b>	Vendor
<b>Affiliation</b>	Alaron Corporation
<b>Phone</b>	513-779-1036
<hr/>	
<b>Title</b>	Decon Recovery Services Copper Recycle System
<b>Data Source</b>	Personal knowledge
<b>Description</b>	Copper recycle system which shreds copper cable. The insulation and copper are separated by classification.
<b>Point of Contact</b>	Escue, Lance

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<b>Role</b>	Decon Recovery Services
<b>Affiliation</b>	
<b>Phone</b>	
<hr/>	
<b>Title</b>	Decontamination for Decommissioning (DFD) Process
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Dilute chemical decontamination process for unrestricted release of stainless steel and alloy 600 components. Uses dilute fluoroboric acid with controlled oxidizing potential, and standard equipment and conventional ion exchange for waste processing. Similar to existing decontamination processes routinely used on subsystems of operational nuclear plants. Achieves decontamination factors exceeding 1000 and contaminant levels equal to background. Process chemicals dissolve radioactive deposits and remove progressively thin layers of base metal to release trapped radioactivity. Contaminants are ultimately trapped in conventional ion exchange resin.
<b>Point of Contact</b>	Carrerre, Jean-Marie
<b>Role</b>	
<b>Affiliation</b>	EPRI
<b>Phone</b>	4 66796302
<hr/>	
<b>Title</b>	Diamond Wire Saw
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Concrete cutting technology that uses a diamond wire saw made from ¼ inch aircraft quality steel cable running through a series of diamond-impregnated beads. Series of hydraulically driven pulleys drive wire. The wire is cooled by water. Operation would be same as TMS #2107, Liquid-Nitrogen Cooled Diamond-Wire Concrete Cutting which uses a liquid nitrogen spray to cool the wire. This is the base system for TMS #2107.
<b>Point of Contact</b>	Kreider, David
<b>Role</b>	Vendor
<b>Affiliation</b>	Bluegrass Concrete Cutting, Inc.
<b>Phone</b>	800-734-2935
<hr/>	
<b>Title</b>	Digital Alarming Dosimeters
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Models DD-300/DD-300M microprocessor-based pocket digital dosimeters providing dose tracking and early warning to gamma and x-ray radiation. DD-300 is programmed to operate with Dose Management and Access Control integrated systems. DD-300M is manually operated. Dosimeters have programmable display for dose and dose rate in R or Si units, and alarms for dose, dose rate and elapsed time. Vendors supplied reader stations access dosimeter data (including accumulated dose, maximum exposed dose,

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dose history) using infrared communication and provide dosimeter calibration. Detector employs energy compensated GM tube and is suitable for personnel and environmental monitoring.

**Point of Contact** Hesch, Jim  
**Role**  
**Affiliation** Eberline  
**Phone** 505-471-3232

**Title** Dosimeters/Dose Mapping  
**Data Source** D&D Tech. Notebook  
**Description** Various technologies including: 1) Laser Heated Thermoluminescence Dosimetry (TLD) System that includes badges that measures total dose and dose by radiation type (beta, gamma, photon, neutron) and badge readers (single and multiple badges) that read and anneal badges, store dose data (multiple reader provides data transfer via floppy drive), and print dose data. 2) Laser TLD Dose Mapping Service. Thermoluminescent dosimetry sheets provided by vendor, after exposure to radiation, are returned to and read with DoseMap results available by e-mail as spreadsheet or ASCII file for viewing of graphical results.

**Point of Contact**  
**Role**  
**Affiliation** Keithley Instruments Inc. - Radiation Measurements Division  
**Phone** 800-552-1115

**Title** DrumScan Modular Segmented Gamma Scanner  
**Data Source** D&D Tech. Notebook  
**Description** Assays waste drums containing gamma-emitting nuclides, allowing selection of appropriate waste disposal options. Effective over a wide range of matrices and isotopic compositions to provide isotopic identification and near real-time assays.

**Point of Contact** Warren, Chris  
**Role** Vendor  
**Affiliation** BNFL Instruments, Ltd.  
**Phone** (0)19467 85017

**Title** Dry Size Reduction System (DSRS)  
**Data Source** FIU LSDDP TIS  
**Description** The Par Systems, Inc. Dry Size Reduction System (DSRS) is an integrated system of mature technologies that can be deployed for decontamination and size reduction of irradiated or contaminated products. These products include waste containers such as fiberglass or wood boxes and light metal containers. As these systems are remotely operated or automated, they inherently protect operations personnel from exposure. The DSRS consists of a XR gantry

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robot or telerobotic manipulator with end effectors for decontaminating and cutting up irradiated or contaminated waste. The entire system is transportable and can be set up inside an existing facility. A wide variety of cutting tools, attached to a quick disconnect, are included e.g. plasma torch, router, circular saw, and hydraulic pipe cutter. An assortment of gripper held tools provide for miscellaneous functions (e.g. impact wrenches, nut splitters, and bolt cutters.). The robot system can be equipped with many decontamination processes, (e.g. frozen CO2 pellet, laser ablation, steam and Ultra High Pressure Water).

**Point of Contact** Prentis, Linda  
**Role** Vendor  
**Affiliation** Par Systems Inc.  
**Phone** 612-484-7261

**Title** Electron Wind Generator (EWG)  
**Data Source** Vendor Literature  
**Description** An air-movement/air-purification device that is energy efficient, scalable, has no moving parts and is virtually silent. It has an ionization effect internally and uses plasma incineration, similar to a lightening strike, to destroy airborne contaminants. Studies to maximize the performance of the EWG are currently under way at the Battelle (PNNL) labs.

**Point of Contact** Fuhrman, Ingrid T.  
**Role**  
**Affiliation** High Voltage Integrated  
**Phone** 425-746-9647

**Title** Electropolishing  
**Data Source** Dick Meservey  
**Description** Electropolishing system for pipes using small tube in pipe. Uses pipe wall as other electrode. Acid etches pipe.

**Point of Contact**  
**Role**  
**Affiliation**  
**Phone**

**Title** En-Vac Robotic Climber  
**Data Source** FIU LSDDP TIS  
**Description** The En-Vac Robotic Climber is similar to Bartlett Robotic Climber, but the En-Vac uses steel grit as the decontamination media. The complete system consists of the En-Vac Robot, Recycling Unit, Filter Unit, and a Vacuum Unit. Vendor claims production rates as high as 1000 ft<sup>2</sup>/hr for coating removal on metal or concrete surfaces. This unit is not an aggressive scabber but it should be able to remove at least 1/8 inch of concrete.

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**Point of Contact** Miyazaki, Koichi  
**Role** Vendor  
**Affiliation** En-Vac  
**Phone** 503-256-5535

**Title** Environmentally Robust LADAR for 3D Imaging  
**Data Source** D&D Tech. Notebook - ANS Robotics/Remote Systems  
**Description** 3D laser imaging systems are extremely powerful sensors useful in a variety of robotic applications as well as for terrain mapping, structure monitoring and other non-robotic applications. New sensor techniques, termed last-pulse and trailing-edge, greatly extend the performance of 3D laser-imaging systems in the presence of dust, smoke and other airborne obscurants.  
**Point of Contact** Moore, Richard M.  
**Role**  
**Affiliation** Carnegie Mellon University  
**Phone** 412-681-6900

**Title** Expandable grouts  
**Data Source** Personal knowledge  
**Description** Expandable grouts are placed into bored holes of concrete and allowed to expand to crack the concrete.  
**Point of Contact**  
**Role**  
**Affiliation**  
**Phone**

**Title** Explosive Cutting Using Linear-Shaped Charges  
**Data Source** Dick Meservey  
**Description**  
**Point of Contact**  
**Role**  
**Affiliation**  
**Phone**

**Title** Feed-Water Nozzle Tool  
**Data Source** D&D Tech. Notebook - ANS Robotics/Remote Systems  
**Description** The feed-water nozzle tool is used to inspect welds to the vessel and to adjoining pipes several feet beyond the vessel. It is a two-axis scanner with passive, spring-loaded transducer holders to facilitate insertion into the nozzle and to accommodate small nozzle diameter changes, while preserving good transducer contact through the scan. The tool, intended for up to 10-

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inch pipe, can extend more than 3-feet into the nozzle. It can clamp to features associated with the nozzle. The tool also has features which allow it to examine the inner radius of the nozzle behind a sparger pipe that extends across the front of the nozzle.

**Point of Contact** Glass, S. W.  
**Role** Vendor  
**Affiliation** Framatome Technologies, Inc.  
**Phone** 804-832-3771

**Title** FissTrack Plutonium Inventory Measurement System  
**Data Source** D&D Tech. Notebook  
**Description** Provides independent verification of plant Nuclear Material Accountancy. Measures total plutonium content of individual vessels, major process zones, and total plant. It is effective over a wide range of Pu isotopic and/or chemical compositions. Information is reported near real time.

**Point of Contact** Warren, Chris  
**Role** Vendor  
**Affiliation** BNFL Instruments, Ltd.  
**Phone** (0)19467 85017

**Title** Fluorocarbon Surfactant Decontamination  
**Data Source** FIU LSDDP TIS  
**Description** This process is designed to nondestructively remove radioactive particles bonded by secondary valence forces from the surfaces of complex parts. The part to be decontaminated is contacted with a fluorocarbon bath or a low pressure spray system.

**Point of Contact** Kaiser, R.  
**Role** Vendor  
**Affiliation** Entropic Systems, Inc.  
**Phone** 617-938-7588

**Title** High Pressure Decon Booths  
**Data Source** D&D Tech. Notebook  
**Description** Stainless steel decontamination booth for cleaning hand tools using 3000 psi water spray at 4 gpm. Equipped with side and top loading doors, and twin glove doors.

**Point of Contact** Downing, Acton  
**Role**  
**Affiliation** Container Products Corp.  
**Phone** 910-392-6100



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<b>Title</b>	High Pressure Waterjet Decon
<b>Data Source</b>	FIU-TIS
<b>Description</b>	High-pressure water blasting removes coatings with a stream of water projected from specially designed nozzles at pressures of 3,000 psig to 15,000 psig. Heavy-duty pumps, typically in the 15 to 600 hp range, supply water at high pressure. The water is sprayed through a nozzle or system of rotating nozzles onto the coated surface. The coating is removed by the impact of the water stream. The stripping action can be supplemented by presoftening with an alcohol solvent or by including soft or hard abrasives in the water system.

**Point of Contact**  
**Role**  
**Affiliation**  
**Phone**

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<b>Title</b>	Horizontal Surface Shot Blaster (EBE 350)
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Model EBE 350 is operationally similar to TMS #1851, Centrifugal Shot Blast System.
<b>Point of Contact</b>	Boudreaux, Paul
<b>Role</b>	Vendor
<b>Affiliation</b>	Pegasus International, Inc
<b>Phone</b>	412-845-2839

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<b>Title</b>	Hydraulic Cutters/Shears
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Various models of high pressure hydraulic power units, hydraulic cutters, mini cutters, and accessories. Hydraulic power units are electric driven with oil or water working fluid; radio remote control system is optional. Hydraulic cutters are hand operated or remote capable combination tools for cutting and spreading. Cutting achieved by scissors-like action. Remote capable models have hydraulic clamping device and robot grip mechanism. Stainless steel cutting capacity is 1 to 6 cm. Continuous cutting model available for metal up to about 1 cm. Mini cutters are hand operated or remote capable tools for cutting and spreading. Stainless steel cutting capacity is 10 to 32 mm or up to 3 mm for continuous cutting. Various blade lengths and shapes available as well as battery operated instead of hydraulic. Accessories include hydraulic hose and reel, robot grip attachments, and fittings.
<b>Point of Contact</b>	Armand, Michel
<b>Role</b>	Vendor
<b>Affiliation</b>	Hydr'am
<b>Phone</b>	04 72 48 90 05

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### Accepted Non-OST Technologies

<b>Title</b>	Hydraulic Shears
<b>Data Source</b>	FIU LSDDP TIS
<b>Description</b>	This system is comprised of a portable shear (30-98lbs), hydraulic cables, and a gasoline powered hydraulic pump. The hydraulic shears can be used to cut underwater piping and structural shapes. The shears are actuated by the hydraulic pump. The system is easy to use and does not generate any secondary waste. The system cost approximately \$14,000.
<b>Point of Contact</b>	Anderson, Ken
<b>Role</b>	Vendor
<b>Affiliation</b>	Framatome Technologies, Inc.
<b>Phone</b>	208-523-5503

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<b>Title</b>	Impact Visor
<b>Data Source</b>	FIU LSDDP TIS
<b>Description</b>	Impact visor for eye protection while working in pressurized suit. A plasma arc cutting (I.e. shaded) variant will be available this summer.
<b>Point of Contact</b>	Cross, Cross
<b>Role</b>	Vendor
<b>Affiliation</b>	BNFL
<b>Phone</b>	703-385-7100

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<b>Title</b>	Implosion
<b>Data Source</b>	Fernald D&D practice
<b>Description</b>	Implosion uses explosives to collapse buildings inward or directly downward to minimize impact to nearby structures. Technique involves cutting selected metal structures and careful design on the location, amount, and timing of each explosive charge within the structure.
<b>Point of Contact</b>	
<b>Role</b>	
<b>Affiliation</b>	CDI
<b>Phone</b>	

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<b>Title</b>	Integrated Characterization, Decontamination & Decommissioning Demonstration (ICD3)
<b>Data Source</b>	FIU LSDDP TIS
<b>Description</b>	This integrated system safely and efficiently characterizes, size reduces, and decontaminates TRU contaminated equipment such as gloveboxes and oversized metallic objects.
<b>Point of Contact</b>	Wagner, L. Steven
<b>Role</b>	Vendor
<b>Affiliation</b>	Roy F. Weston, Inc.
<b>Phone</b>	505-837-6571

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<b>Title</b>	Ionization Chambers
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Portable air ionization chamber instrument used to detect beta, gamma, and x-rays. Features include: Five linear ranges for exposure rate between 5 mR/h to 5 R/h, venting to atmospheric pressure, flat energy response in x-ray region, temperature compensation, factory calibrated for gamma, single rotary selector switch, internal switching of ranges using reed relays.
<b>Point of Contact</b>	Hesch, Jim
<b>Role</b>	
<b>Affiliation</b>	Eberline
<b>Phone</b>	505-471-3232

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<b>Title</b>	IonSens 208 Large Item Monitor
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Measures alpha contamination of exposed surfaces of complex items such as process equipment and bent pipe work. External surfaces of solid items such as bricks and ingots can also be measured. Metal waste items with dimensions to 1.0m x 1.0m x 0.8m can be accommodated and other measurement chamber geometries are available. Background and standardization measurements are performed automatically.
<b>Point of Contact</b>	Warren, Chris
<b>Role</b>	Vendor
<b>Affiliation</b>	BNFL Instruments, Ltd.
<b>Phone</b>	(0)19467 85017

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<b>Title</b>	IonSens Conveyor Monitor
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Provides measurement of soil and rubble arising from decommissioning or remediation operations. Alpha or beta/gamma measurements are available. Large volumes of material can be quickly classified as unrestricted release or LLW. A diverter is available to remove material exceeding a preset activity threshold.
<b>Point of Contact</b>	Warren, Chris
<b>Role</b>	Vendor
<b>Affiliation</b>	BNFL Instruments, Ltd.
<b>Phone</b>	(0)19467 85017

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<b>Title</b>	IPAN/GEA (imaging passive-active neutron/gamma energy assay) Crate System
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Provides analysis of TRU and low level waste allowing selection of

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	appropriate waste disposal method. Measures fissile material in crates with dimensions to 8' x 8' x 20'. Is capable of isotopic identification and real-time assay.
<b>Point of Contact</b>	Warren, Chris
<b>Role</b>	Vendor
<b>Affiliation</b>	BNFL Instruments, Ltd.
<b>Phone</b>	(0)19467 85017
<hr/>	
<b>Title</b>	IPAN/GEA (imaging passive-active neutron/gamma energy assay) Drum System
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Provides analysis of TRU and low level waste allowing selection of appropriate waste disposal method. Measures fissile material in 200 liter and 500 liter drums. Is capable of isotopic identification and real-time assay. Designed to meet WIPP WAC NDA characterization requirements.
<b>Point of Contact</b>	Warren, Chris
<b>Role</b>	Vendor
<b>Affiliation</b>	BNFL Instruments, Ltd.
<b>Phone</b>	(0)19467 85017
<hr/>	
<b>Title</b>	Isolok Sampler
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Isolok Sampler available from Bristol Equipment Company of Yorkville, IL. This technology was highlighted in the winter 1998-99 edition of Engineering Division News, a publication of the American Society of Safety Engineers. This mechanical device darts into a reactor or pipeline and takes a representative sample, without creating an opening. (for more information see <a href="http://www.controlmagazine.com">http://www.controlmagazine.com</a> ; February 1998, pp. 70-76).
<b>Point of Contact</b>	
<b>Role</b>	
<b>Affiliation</b>	
<b>Phone</b>	
<hr/>	
<b>Title</b>	Kool Jacket
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Personal cooling garments based on vendors patented phase change material (PCM) cooling technology. Kool Jacket is designed for extreme work environments (125 F) or for extended work duration (2.5 hours). Kool Jacket Lite is a lighter version for ambient heat levels up to 110 F and for work duration of 2 hours. Vest is lightest version for ambient heat levels up to 100 F and work duration of about 2 hours. The PCM system employs cooling packs that are inserted into pockets on the jackets and vests. The cooling

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	<p>packs are recharged in 20 minutes by submersion in ice and water. PCM systems maintains 65 F.</p>
<b>Point of Contact</b>	Ehrenfeld, Joseph
<b>Role</b>	Vendor
<b>Affiliation</b>	Kool N' Safe
<b>Phone</b>	888-422-5665
<hr/>	
<b>Title</b>	Kool Jacket Lite
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	<p>Personal cooling garments based on vendors patented phase change material (PCM) cooling technology. Kool Jacket is designed for extreme work environments (125 F) or for extended work duration (2.5 hours). Kool Jacket Lite is a lighter version for ambient heat levels up to 110 F and for work duration of 2 hours. Vest is lightest version for ambient heat levels up to 100 F and work duration of about 2 hours. The PCM system employs cooling packs that are inserted into pockets on the jackets and vests. The cooling packs are recharged in 20 minutes by submersion in ice and water. PCM systems maintains 65 F.</p>
<b>Point of Contact</b>	Ehrenfeld, Joseph
<b>Role</b>	Vendor
<b>Affiliation</b>	Kool N' Safe
<b>Phone</b>	888-422-5665
<hr/>	
<b>Title</b>	Kool Vest
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	<p>Personal cooling garments based on vendors patented phase change material (PCM) cooling technology. Kool Jacket is designed for extreme work environments (125 F) or for extended work duration (2.5 hours). Kool Jacket Lite is a lighter version for ambient heat levels up to 110 F and for work duration of 2 hours. Vest is lightest version for ambient heat levels up to 100 F and work duration of about 2 hours. The PCM system employs cooling packs that are inserted into pockets on the jackets and vests. The cooling packs are recharged in 20 minutes by submersion in ice and water. PCM systems maintains 65 F.</p>
<b>Point of Contact</b>	Ehrenfeld, Joseph
<b>Role</b>	Vendor
<b>Affiliation</b>	Kool N' Safe
<b>Phone</b>	888-422-5665
<hr/>	
<b>Title</b>	KSI Tentacle Manipulator
<b>Data Source</b>	FIU LSDDP TIS
<b>Description</b>	Crane-deployed teleoperated robot for surface decontamination.

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<b>Point of Contact</b>	Immega, Guy
<b>Role</b>	Vendor
<b>Affiliation</b>	Kinetic Sciences Inc.
<b>Phone</b>	604-822-5782

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<b>Title</b>	Large Area Survey Monitor
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Provides in-situ measurement of Plutonium in soil, debris and buried containers for criticality control. Measures a volume with an area of approximately 2.5m x 2.5m and a depth of 1m. Can be operated remotely in contaminated radioactive environments.
<b>Point of Contact</b>	Warren, Chris
<b>Role</b>	Vendor
<b>Affiliation</b>	BNFL Instruments, Ltd.
<b>Phone</b>	(0)19467 85017

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<b>Title</b>	Laser
<b>Data Source</b>	FIU LSDDP TIS
<b>Description</b>	This technology uses a short-pulse CO2 laser and a diagnostics system for controlled ablation of paint on metallic and fiber composite substrates.
<b>Point of Contact</b>	Schulz, O.
<b>Role</b>	Vendor
<b>Affiliation</b>	Schlink-Urenco (Germany)
<b>Phone</b>	

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<b>Title</b>	Laser ZAWCAD
<b>Data Source</b>	FIU LSDDP TIS
<b>Description</b>	Laser ZAWCAD (Zero Added Waste Cutting Abrading and Drilling) makes use of a high-power laser to ablate surface coatings. The surface is processed in a faster fashion by a powerful laser, which has been tuned to the appropriate energy (wavelength) and beam size to remove a given contaminant from the substrate. An attached vacuum system removes the released residue to an Effluent Management System for processing and disposal and/or destruction. The system is portable and can be remotely operated.
<b>Point of Contact</b>	Decker, Gerald
<b>Role</b>	Vendor
<b>Affiliation</b>	ZAWTECH International
<b>Phone</b>	770-495-3929

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<b>Title</b>	Liquid waste treatment technologies
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	The liquid waste treatment technologies are various methods for low-level liquid waste treatment and volume reduction. They include 1) portable trailer based solidification system utilizing approved and accepted media such as Portland cement, Aquaset and Petroset to solidify waste in 55 gallon drums; 2) portable trailer based evaporation system for volume reduction to produce a concentrated residue for disposal. The distillate is separated and scrubbed to allow safe discharge; 3) portable trailer based blending system utilizing proven absorbents such as Spag Sorb to immobilize the radioactive components in the liquid waste; mobile high efficiency dryer system for evaporation of water in liquid waste to achieve maximum volume reduction; and 5) mobile ultrafiltration/reverse osmosis system for concentrating total suspended solids (TSS) and total dissolved solids (TDS) and achieving volume reduction. Two processing sizes available and systems are housed in iso-containers.
<b>Point of Contact</b>	
<b>Role</b>	
<b>Affiliation</b>	Framatome Technologies, Inc.
<b>Phone</b>	804-832-3763

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<b>Title</b>	LUKAS Rescue Tools - Hydraulic Cutting Shears
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Various portable, manually operated devices capable of cutting round bar stock up to 3 cm plus spreading devices and combination cutting/spreading devices. One system demonstrated at the C-Reactor LSDDP (TMS # 1948), the Lukas model LKE 70, is a self-contained pipe cutting shear that does not require any hydraulic fluid lines. This shear has a built-in accumulator that uses approximately 1 pt of hydraulic fluid. The shear is easy to carry and use with the sling provided. It also has a built-in rechargeable battery that allows 0.25 hr of continuous operation. An optional battery giving 0.5 hr of operation is available.
<b>Point of Contact</b>	Klughart, Chris
<b>Role</b>	
<b>Affiliation</b>	Rescue Team, Inc.
<b>Phone</b>	540-891-6600

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<b>Title</b>	MicroVGTV
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Described as ideal for HVAC duct inspection. The Variable Geometry Tracked Vehicle (VGTV) can change the configuration of the track system while operating. Transported camera allows visual inspection. 30m tether available.

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**Point of Contact** Knight, Terry  
**Role**  
**Affiliation** Inuktun Services, Ltd.  
**Phone** 360-650-0460

**Title** Milling  
**Data Source** FIU LSDDP TIS  
**Description** A proprietary medium that permits selective removal from concrete substrates. It is comprised of various types of tungsten carbide; this system keeps the bits captive to the tool. Waste generation is limited to the material removed and expended bits.  
**Point of Contact** Competello, Joe  
**Role** Vendor  
**Affiliation** EDCO  
**Phone** 800-638-3326

**Title** Minescout  
**Data Source** D&D Tech. Notebook  
**Description** It is adapted from a 1:8 scale Caterpillar™ D11N Track-Type Tractor. The design results in a robust, remotely controlled platform. It is capable of deploying a variety of characterization and remediation equipment.  
**Point of Contact**  
**Role**  
**Affiliation** International machinery Corp  
**Phone**

**Title** MiniTrac & MicroTrac; Remote Operated Crawlers  
**Data Source** D&D Tech. Notebook  
**Description** Powered track units to move an appropriately small platform. They are rated to operate to a depth of 30m. The tether providing power and controls can be up to 300m long.  
**Point of Contact** Knight, Terry  
**Role**  
**Affiliation** Inuktun Services, Ltd.  
**Phone** 360-650-0460

**Title** Mobile Decon Systems (super-heated water, abrasive blasting, or mechanical rotary systems)  
**Data Source** D&D Tech. Notebook  
**Description** Model S/SSAP 2000 truck mounted system employing super-heated water



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cleaning at hydro-laser pressure. Performs simultaneous cleaning and “pickup” of contaminated media. Applied for cleanup of oil spills, hazardous toxic material, parking lots and airport runways/ramps, refineries, etc. Model S/SSAP 3000 designed for remote location decontamination in the nuclear industry. Model S/SCARP utilizes abrasive blasting and mechanical rotary cleaning devices. Applied for removal and capture of lead based paints and other hazardous materials, and removal of substrate material to remediate imbedded nuclear or non-nuclear contaminants.

**Point of Contact** Downing, Acton  
**Role**  
**Affiliation** Container Products Corp.  
**Phone** 910-392-6100

**Title** Mobile Decontamination Facility  
**Data Source** D&D Tech. Notebook  
**Description** Trailer mounted mobile facility with mechanical decontamination (glass bead, steel grit, aluminum oxide, sponge/fiber, garnet) and chemical decontamination (employing dip and spray tanks) systems, and survey/release area. Can receive, process, and return objects from B-25 or similar containers. Object size limits are 200 LB and 24 inches square or pipe up to 8 foot length and 2 inch diameter. Equipped with HEPA filtration and radiation monitoring systems. Suitable for metals cleaning/recycle, tool cleaning, small equipment dismantlement/cleaning, and secondary waste management.

**Point of Contact**  
**Role**  
**Affiliation** American Technologies, Inc.  
**Phone** 865-482-2400

**Title** Mobile Platform, Heavy-Duty, Multiple Manipulator Robot  
**Data Source** FIU LSDDP TIS  
**Description** Heavy-duty robotic manipulators mounted on a mobile platform capable of cutting pipe overhead and handling heavy loads at a distance.  
**Point of Contact** Dunwoody, Bert  
**Role** Vendor  
**Affiliation** James Howden and Company (Lamberton Robotics)  
**Phone** 441418866711

**Title** Model 4 Tube Cleaner  
**Data Source** FIU LSDDP TIS  
**Description** Inspection and cleaning of process materials from interior of piping by scrapping, chemical cleaning, mechanical pigging and sonic flow sound

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	blasting.
<b>Point of Contact</b>	Carter, Earnie
<b>Role</b>	Vendor
<b>Affiliation</b>	Carter Technologies
<b>Phone</b>	713-495-2603
<hr/>	
<b>Title</b>	MURV-100 Teleoperated Robot System
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Remotely operable platform. Relatively small and convenient. Battery powered operation.
<b>Point of Contact</b>	Gadus, David
<b>Role</b>	Vendor
<b>Affiliation</b>	HDE Manufacturing, Inc.
<b>Phone</b>	817-336-5449
<hr/>	
<b>Title</b>	NEATER (Nuclear Engineered Advanced Robots)
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	The NEATER 760 and light weight 660 are radiation hardened robots for use wherever manipulative tasks or tool deployment is needed. Can be used in sampling, surveying, waste handling and decontamination and decommissioning (glovebox) tasks.
<b>Point of Contact</b>	
<b>Role</b>	Vendor
<b>Affiliation</b>	AEA Technology Engineering Service, Inc.
<b>Phone</b>	
<hr/>	
<b>Title</b>	NOMAD Plus and MicroNOMAD Portable Spectroscopy Systems
<b>Data Source</b>	FIU LSDDP TIS
<b>Description</b>	NOMAD Plus and Micro-NOMAD are portable x-ray multi-channel analyzers with associated detectors. NOMAD Plus is a full spectrometer for either Ge or NaI detectors with associated software for portable PCs. Micro-NOMAD is limited to low-resolution NaI detectors and can store 63 512-channel spectra for later downloading. Gamma-ray spectrometry monitors offer a broad range of radionuclides and can detect sources remotely because the x-rays are not effectively attenuated by air, concrete, or most other construction materials.
<b>Point of Contact</b>	Paulus, T. J.
<b>Role</b>	Vendor
<b>Affiliation</b>	EG&G
<b>Phone</b>	615-482-4411
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<b>Title</b>	Nukem wire saw
<b>Data Source</b>	Personal knowledge
<b>Description</b>	
<b>Point of Contact</b>	
<b>Role</b>	
<b>Affiliation</b>	
<b>Phone</b>	
<hr/>	
<b>Title</b>	Passive Aerosol Generator (PAG)
<b>Data Source</b>	FIU LSDDP TIS
<b>Description</b>	The PAG creates an aerosol of organic material that is slowly introduced into an area. This aerosol evenly coats all surfaces in the area. This surface coating is tacky which encapsulates contaminants and prevents resuspension of contaminants. This technology makes it possible to work in an environment with 0 DAC's.
<b>Point of Contact</b>	DiMascio, Nick
<b>Role</b>	Vendor
<b>Affiliation</b>	Bartlett Services, Inc.
<b>Phone</b>	508-746-6464
<hr/>	
<b>Title</b>	PETROSET II
<b>Data Source</b>	FIU LSDDP TIS
<b>Description</b>	Solidification/stabilization of water-immiscible liquids using a finely ground, strongly organophilic solidification agent with power mixing.
<b>Point of Contact</b>	Rowsell, Dean
<b>Role</b>	Vendor
<b>Affiliation</b>	Fluid Tech, Inc.
<b>Phone</b>	702-871-1884
<hr/>	
<b>Title</b>	Photogrammetry
<b>Data Source</b>	FIU LSDDP TIS
<b>Description</b>	The photogrammetry process involves the use of a high resolution digital camera to capture a digitally-linked series of still photographs of the facility features and other portions of the project. The photographs are analyzed in the office so that accurate dimensions can be obtained directly from the photographs. These pictures are then used as the basis for all modeling and drawing, as well as estimate take offs and project interface planning.
<b>Point of Contact</b>	Gallagher, Phil
<b>Role</b>	Vendor
<b>Affiliation</b>	MEIER Associates
<b>Phone</b>	509-735-1589
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<b>Title</b>	Pioneer Robot
<b>Data Source</b>	D&D Tech. Notebook - ANS Robotics/Remote Systems
<b>Description</b>	The Pioneer robot is a tracked vehicle approximately 3.9 ft. (1.2 m) long and 2.6 ft. (.8 m) wide. The Pioneer was used at the Chernobyl Unit 4 Shelter to collect information about the shelter's mechanical properties in the form of solid samples useful in future structural tests. The Pioneer operates a remote concrete sampling drill that consists of a one-DOF carriage that thrusts a rotating hollow bit into a wall or floor, and a sensor that measures reaction forces and torques during the sampling process. The vehicle can also carry a plow blade, a manipulator arm, radiation and environmental sensors, a rad-hard video camera, and a 3D mapping system. A 328-ft (100-meter) tether passes all electrical signals and power from the remote-control console to the robot.
<b>Point of Contact</b>	
<b>Role</b>	
<b>Affiliation</b>	RedZone Robotics, Inc.
<b>Phone</b>	
<hr/>	
<b>Title</b>	Pipe Crimper
<b>Data Source</b>	FIU LSDDP TIS
<b>Description</b>	The Pipe Crimper is used to crimp, seal and cut various sizes of piping. It has been demonstrated PPPL for use in the removal of the Tritium delivery lines.
<b>Point of Contact</b>	Rule, Keith
<b>Role</b>	Vendor
<b>Affiliation</b>	
<b>Phone</b>	
<hr/>	
<b>Title</b>	Pipe Decontamination System - FIU-HCET
<b>Data Source</b>	FIU LSDDP TIS
<b>Description</b>	A system capable of cleaning the inside of vertical piping systems ranging from 4 inch to 24 inch diameter. The process integrates a vacuum blaster with a hollow blast system in a closed system to clean pipe internals. Steel grit is used as the media which will produce a near white metal finish on carbon steel surface. A vacuum system keeps the pipe at a negative pressure with respect to the general work area and collects and recycles the grit media.
<b>Point of Contact</b>	Lagos, Leo
<b>Role</b>	PI
<b>Affiliation</b>	Florida International University Center for Engineering
<b>Phone</b>	
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<b>Title</b>	Pipe Walker
<b>Data Source</b>	FIU LSDDP TIS
<b>Description</b>	Remote controlled pipeline inspection system; self-propelled, powered by compressed gas; capable of multitask inspections, including videography, radiography, and ultrasonic; Three versions -- for 3 1/2 - 5 inch, 5-10 inch and 8-14 inch pipe size; range to 500 meters; moves stepwise using accordion type legs with plastic covered feet for grip.
<b>Point of Contact</b>	Propeck, John
<b>Role</b>	Vendor
<b>Affiliation</b>	Oceaneering Technologies
<b>Phone</b>	281-488-9080

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<b>Title</b>	Plasma Arc Torch
<b>Data Source</b>	Unknown
<b>Description</b>	
<b>Point of Contact</b>	
<b>Role</b>	
<b>Affiliation</b>	
<b>Phone</b>	

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<b>Title</b>	Plutonium Can Contents Monitor
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Measures the total plutonium content and isotopic composition of filled PuO <sub>2</sub> product cans. It is effective over a wide range of plutonium isotopic compositions. The contents of sealed cans can be verified without expensive sampling routines.
<b>Point of Contact</b>	Warren, Chris
<b>Role</b>	Vendor
<b>Affiliation</b>	BNFL Instruments, Ltd.
<b>Phone</b>	(0)19467 85017

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<b>Title</b>	Polyurea Spray Elastomers
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Coating applications. No description available.
<b>Point of Contact</b>	
<b>Role</b>	
<b>Affiliation</b>	Huntsman Corp/Huntsman Specialty Chemicals Corp
<b>Phone</b>	512-459-6543

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<b>Title</b>	Portable Articulated Arm Deployment System (PAADS)
<b>Data Source</b>	D&D Tech. Notebook - ANS Robotics/Remote Systems
<b>Description</b>	The Portable Articulated Arm Deployment System (PAADS), pronounced "pads", is a remotely controlled vehicle for delivering a tele-operated electro-hydraulic manipulator arm to a field deployable location. The self-contained system includes a boom vehicle with long reach capability, an electro-hydraulic manipulator arm, closed circuit television (CCTV) systems, and onboard tools. On board power systems consist of a self contained, propane fired 8 KW generator and an air compressor for pneumatic tools. The generator provides the power to run the air compressor as well as provide power to operate the 110 VAC auxiliary lighting system for the video cameras. The separate control console can be located up to 500 ft from the vehicle. PAADS is a fully integrated system, containing all equipment required to perform complex field operations.
<b>Point of Contact</b>	Borland, Mark W.
<b>Role</b>	
<b>Affiliation</b>	Idaho National Engineering Laboratory (INEEL)
<b>Phone</b>	208-533-4458
<hr/>	
<b>Title</b>	Portable Survey Meters
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Models ASP-2/2e microprocessor based portable survey meters. Operating modes include check, ratemeter, integration and scaler, and pulse height analysis. Operates with GM, scintillator, and proportional type detectors. Features are dual analog/digital display, computer setup and calibration, selectable units of measurement, wide range high voltage, dead time correction, built-in speaker, and alarm annunciation.
<b>Point of Contact</b>	Hesch, Jim
<b>Role</b>	
<b>Affiliation</b>	Eberline
<b>Phone</b>	505-471-3232
<hr/>	
<b>Title</b>	Quik-Solid
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Solid, granular cross-linked polyacrylate advanced super absorbent polymer that rapidly absorbs and retains large volumes of aqueous solutions. Suited for absorption and solidification of radioactive and other waste waters. Polymer is non-biodegradable, will not release liquid after freeze/thaw cycle up to 160 F, will not release ionic contaminants if solute evaporates, and has minimal (<1%) volume expansion.
<b>Point of Contact</b>	
<b>Role</b>	
<b>Affiliation</b>	CHEMDAL International
<b>Phone</b>	847-705-5600
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<b>Title</b>	RADCON LASER (ERASER)
<b>Data Source</b>	FIU LSDDP TIS
<b>Description</b>	The YAG ERASER technology system consists of a 600 Wtt YAG LASER system with a strip rate is about 6ft <sup>2</sup> /hr based on 12 mils of paint. A specialized optical fiber helps transmit the laser light to a hand-held work head. The work head consists of control and feedback systems. The control system allows the operator to adjust the stripping rate and area of the path of removal, to start and stop the stripping process, and to provide an emergency stop function. The feedback systems provided the operator with a visual representation of the surface that is being removed and the input to the laser control software. A vacuum line is connected to a waste management system consisting of HEPA filters and charcoal pellets.
<b>Point of Contact</b>	Fish, James
<b>Role</b>	Vendor
<b>Affiliation</b>	EXITECH Corp/Lasertronic
<b>Phone</b>	865-983-9101

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<b>Title</b>	Radiation Detectors
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	This is a large assortment of neutron radiation detectors. Four varieties are listed: BF <sub>3</sub> , He <sub>3</sub> , B 10 lined, and proton recoil fast neutron detectors. Functions include flux mapping, monitoring, surveying, general purpose, etc.
<b>Point of Contact</b>	
<b>Role</b>	
<b>Affiliation</b>	LND, Inc.
<b>Phone</b>	516-678-6141

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<b>Title</b>	Remote Handling Systems & Manipulators
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	These range from relatively heavy-duty manipulators and remote handling systems to systems with sensitive force reflection giving the operator the “feeling he has the tools in his hand.”
<b>Point of Contact</b>	
<b>Role</b>	
<b>Affiliation</b>	NOELL GmbH
<b>Phone</b>	09 31/9 03-13 18

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<b>Title</b>	Robotic Climber
<b>Data Source</b>	FIU LSDDP TIS
<b>Description</b>	The Robotic Climber is a versatile, highly effective device which can climb walls and even inverted surfaces. It functions equally well on floors or slopes. Using high pressure water, this technology scours off coating,

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scabbles concrete or decontaminates surfaces. And with a powerful vacuum, all effluent is both completely contained and transported to treatment. The Robotic Climber is held to the surface by a vacuum. Mobility is provided with motorized tank tracks. This technology is designed to dramatically reduce exposure to toxic/harmful materials to humans, to eliminate the need for costly scaffolding and containment structures, and to provide higher productivity compared to conventional methods.

**Point of Contact** Maggio, Samuel J.  
**Role** Vendor  
**Affiliation** Hennigan Engineering  
**Phone** 800-472-8484

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**Title** Rocky Nozzle Scanner  
**Data Source** D&D Tech. Notebook - ANS Robotics/Remote Systems  
**Description** ROCKY is a general purpose tracked or wheeled, remotely-controlled vehicle used for underwater inspection and repair activities. The vehicle is a 1-foot wide by 2-foot long track-drive robot with an umbilical cable providing power and a remote control attached to the rear surface. It was developed to conduct examinations deep within larger pipe segments (27-38 inches) such as the primary inlet and outlet nozzles of PWR reactor vessels.

**Point of Contact** Glass, S. W.  
**Role** Vendor  
**Affiliation** Framatome Technologies, Inc.  
**Phone** 804-832-3771

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**Title** Rototherm Portable Concentrator  
**Data Source** FIU LSDDP TIS  
**Description** The portable concentrator uses heat and rotor assisted evaporation to concentrate waste solutions (hazardous and radioactive) into a high solid content slurry. It is closed-loop, portable, modular, low maintenance and criticality safe.

**Point of Contact** Chamberlain, David B.  
**Role** Vendor  
**Affiliation** Artisan Industries, Inc.  
**Phone** 630-252-7699

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**Title** Safety-Injection Nozzle Tool  
**Data Source** D&D Tech. Notebook - ANS Robotics/Remote Systems  
**Description** The safety-injection nozzle tool is used to inspect welds to the vessel and to adjoining pipes several feet beyond the vessel. It is a two-axis scanner with passive, spring-loaded transducer holders to facilitate insertion into the nozzle and to accommodate small nozzle diameter changes, while preserving



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**Accepted Non-OST Technologies**

good transducer contact through the scan. The tool, intended for 6-inch pipe, can extend more than 3-feet into the nozzle. The tool also clamps to features associated with the nozzle.

**Point of Contact** Glass, S. W.  
**Role** Vendor  
**Affiliation** Framatome Technologies, Inc.  
**Phone** 804-832-3771

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**Title** Scarab III Remote Vehicle  
**Data Source** D&D Tech. Notebook - ANS Robotics/Remote Systems  
**Description** The Scarab is a small remotely operated vehicle for inspection and cleanout of small horizontal waste storage tanks that have limited access. It is both relatively inexpensive and able to access tank risers as small as 18-in. diameter. The Scarab is a tracked vehicle with an independently actuated front and rear “toe” degree-of-freedom which allows the stand-off and angle of the vehicle platform with respect to the floor to be changed.  
**Point of Contact** Noakes, Mark W.  
**Role**  
**Affiliation** ORNL  
**Phone** 423-574-5695

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**Title** Scissors; Camera Deployment Mechanism  
**Data Source** D&D Tech. Notebook  
**Description** This is a remotely operated modular unit employing a video camera and variable intensity lights. The camera can be raised to a height of 65 inches. It has tilt and pan capabilities. The tether for this unit is 300 ft long.  
**Point of Contact** Knight, Terry  
**Role**  
**Affiliation** Inuktun Services, Ltd.  
**Phone** 360-650-0460

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**Title** Seamor  
**Data Source** D&D Tech. Notebook  
**Description** Described as a remotely operated submersible with color video inspection camera.  
**Point of Contact** Knight, Terry  
**Role**  
**Affiliation** Inuktun Services, Ltd.  
**Phone** 360-650-0460

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<b>Title</b>	Sivablast System
<b>Data Source</b>	D&D Tech. Notebook - ANS Robotics/Remote Systems
<b>Description</b>	The Sivablast system developed by Siemens consists of a generator, reclaimer, dust collector and blasting and vacuum tools. The generator incorporates a pressure vessel furnished with an adjustable feed valve from which the blasting beads are fed through the blasting nozzle. The reclaimer recovers the blasting grit via the vacuum nozzle after it has been used and separates the dust and debris from the re-usable blasting grit with an adjustable air wash unit.
<b>Point of Contact</b>	Bains, N.
<b>Role</b>	
<b>Affiliation</b>	Atomic Energy Commission
<b>Phone</b>	905-823-9040
<hr/>	
<b>Title</b>	Soildification/Stabilization Agents
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	The products are solidification/stabilization agents, developed for the efficient and economical disposal of radioactive, hazardous chemical, and mixed wastes. They are slightly alkaline, non-flammable, non-reactive and non-corrosive, and are not biodegradable. These reagents immobilize wastes (liquid, sludge, or solid) trhough the action of complex bonding mechanisms and ion exchange reactions. The end result is an homogeneous waste solid with excellent leach resistance.
<b>Point of Contact</b>	
<b>Role</b>	
<b>Affiliation</b>	Fluid Tech, Inc.
<b>Phone</b>	702-871-1884
<hr/>	
<b>Title</b>	Special Study
<b>Data Source</b>	Dan Young
<b>Description</b>	The Trojan contaminated reactor vessel was disposed of as LLW based on an analysis and process of backfilling the vessel with concrete. A similar process depending on the activity level, and makeup of contaminants may be an option for the Raschig Ring Tanks.
<b>Point of Contact</b>	Young, Daniel B.
<b>Role</b>	
<b>Affiliation</b>	RIO Technical Services, Inc.
<b>Phone</b>	304-285-4039
<hr/>	
<b>Title</b>	Telbot Manipulator System
<b>Data Source</b>	D&D Tech. Notebook - ANS Robotics/Remote Systems
<b>Description</b>	The Telbot manipulator (Figure 1.) has six degrees of freedom and a unique

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drive system that allows unrestricted motion of each joint. All of the electronics and cables are contained within the base of the manipulator with no electrical parts in the arm itself. The Telbot has a repeatability better than 0.1mm and the links and joints can be easily modified to suit the desired workspace.

**Point of Contact** Bains, N.  
**Role**  
**Affiliation** Atomic Energy Commission  
**Phone** 905-823-9040

**Title** Tele-Operated Crawler System  
**Data Source** D&D Tech. Notebook - ANS Robotics/Remote Systems  
**Description** The Tele-Operated Crawler System is a modified, commercially available crawler. Magnets in the wheels secure it to interior vessel walls at all orientations. A powered wire brush with remote vacuum system clean the wall. A small color TV camera allows inspection of the area in front of the crawler. It is operated through an umbilical cord from a control console using a joystick.

**Point of Contact** Dennison, David K.  
**Role**  
**Affiliation** Los Alamos National Lab (LANL)  
**Phone** 505-667-9515

**Title** Thermal Spray Vitrification  
**Data Source** tbd (AEA?)  
**Description** Internal decontamination can be accomplished with the application of a sprayed vitrification substance. Once dried, the material will flack off and can be vacuumed.

**Point of Contact**  
**Role**  
**Affiliation**  
**Phone**

**Title** Transite "Bolt" Removal and Capture Device  
**Data Source** FIU LSDDP TIS  
**Description** Hand operated device to remove transite fastener heads and "catch" the head and lead washer. Can be pneumatic or Hydraulic  
**Point of Contact** Reynolds, Evans  
**Role** Vendor  
**Affiliation** B&W Nuclear Environmental Services  
**Phone** 804-848-4615

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<b>Title</b>	Transite Pulverizer/Transfer System
<b>Data Source</b>	FIU LSDDP TIS
<b>Description</b>	This pulverizer is an enclosed unit kept under negative pressure by a Vecloader HEPA Vacuum System.
<b>Point of Contact</b>	Alexander, Brent
<b>Role</b>	Vendor
<b>Affiliation</b>	Vector Technologies Ltd.
<b>Phone</b>	800-340-3186

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<b>Title</b>	TRU Crate/Box Monitor
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Provides plutonium analysis of large redundant plant items allowing selection of appropriate waste disposal options. Allows compliance with criticality safety cases and transport regulations. Automatically identifies and corrects for PuF4 contaminated wastes.
<b>Point of Contact</b>	Warren, Chris
<b>Role</b>	Vendor
<b>Affiliation</b>	BNFL Instruments, Ltd.
<b>Phone</b>	(0)19467 85017

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<b>Title</b>	TRU Drum Monitor
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Provides analysis of TRU waste drums allowing selection of appropriate waste disposal options. PuF4 contamination is automatically identified and corrected for. Will accommodate both 200 liter and 500 liter drums.
<b>Point of Contact</b>	Warren, Chris
<b>Role</b>	Vendor
<b>Affiliation</b>	BNFL Instruments, Ltd.
<b>Phone</b>	(0)19467 85017

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<b>Title</b>	TRU Piece Monitor
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Provides TRU drum accountancy and contents monitoring “piece by piece.” Usually positioned at the interface between clean-air and the active decommissioning area. The through-containment design provides access to the counting chamber from the active operations side, whilst the detection equipment remains on the cleaner side.
<b>Point of Contact</b>	Warren, Chris
<b>Role</b>	Vendor
<b>Affiliation</b>	BNFL Instruments, Ltd.
<b>Phone</b>	(0)19467 85017

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<b>Title</b>	TRU-D 400 TRU Package Monitor
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Measures TRU waste packages at point of origin to provide GO/NO GO indication of Pu content for criticality control. Monitors packages up to 350mm x 350mm x 450mm, with Pu content up to 500g. For waste disposal and decommissioning, versions of the monitor are available to provide full material accountancy measurement of packages prior to loading of waste drums.
<b>Point of Contact</b>	Warren, Chris
<b>Role</b>	Vendor
<b>Affiliation</b>	BNFL Instruments, Ltd.
<b>Phone</b>	(0)19467 85017
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<b>Title</b>	TV3 Stereoscopic TV
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	3D or stereoscopic TV enables depth, scale and scene texture in remote environments during inspection surveys or in the course of carrying out remote tasks involving manipulation or tool deployment.
<b>Point of Contact</b>	
<b>Role</b>	Vendor
<b>Affiliation</b>	AEA Technology Engineering Service, Inc.
<b>Phone</b>	
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<b>Title</b>	Underwater Remotely Operated Detectors
<b>Data Source</b>	FIU LSDDP TIS
<b>Description</b>	This technology may be applied to the characterization of dose rates, radionuclides and activities. The sensors are housed in durable watertight housings and can be deployed remotely where they would be free to move around and home in on items of interest. The technology is not restricted to a grid reference and could be integrated to a PC for real time imaging of contamination/dose rates. A wide range of sensors can be deployed including simple dose rate meters, high resolution gamma spectrometry and low resolution gamma spectrometry. All sensors and data acquisition/analysis systems are compact and portable.
<b>Point of Contact</b>	Read, Paul
<b>Role</b>	Vendor
<b>Affiliation</b>	
<b>Phone</b>	114419647785015
<hr/>	
<b>Title</b>	Uranium Drum Enrichment Monitor
<b>Data Source</b>	D&D Tech. Notebook

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<b>Description</b>	The Uranium Drum Enrichment Monitor (UDEM) allows the fast and accurate verification of the contents of sealed uranium product drums without the need for expensive sampling routines. UDEM identifies product drums containing higher enrichment than normal product using gamma detection techniques.
<b>Point of Contact</b>	Warren, Chris
<b>Role</b>	Vendor
<b>Affiliation</b>	BNFL Instruments, Ltd.
<b>Phone</b>	(0)19467 85017

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<b>Title</b>	URSULA Reactor Vessel NDE Robot
<b>Data Source</b>	D&D Tech. Notebook - ANS Robotics/Remote Systems
<b>Description</b>	The URSULA robot is comprised of a base and control assembly, a thruster assembly, a six-degree-of-freedom electrically driven arm, and several ultrasonic (UT) tools for underwater inspection. The base attaches to the vessel via three suction cups. Each component in the arm and base is neutrally buoyant to minimize load on the suction attachments while the umbilical cord is positively buoyant so it floats up, out of the way of the scanning arm.
<b>Point of Contact</b>	Glass, S. W.
<b>Role</b>	Vendor
<b>Affiliation</b>	Framatome Technologies, Inc.
<b>Phone</b>	804-832-3771

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<b>Title</b>	Versatrax; Remote Pipe Inspection
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	This is a remotely operated inspection system designed primarily for operation inside municipal sewer line and storm drain networks. It is sealed for submerged operation to a depth of 30m. A reel mounted tether allows the unit to travel over 300m in pipes at least six inches in diameter.
<b>Point of Contact</b>	Knight, Terry
<b>Role</b>	
<b>Affiliation</b>	Inuktun Services, Ltd.
<b>Phone</b>	360-650-0460

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<b>Title</b>	Vertical Surface Shot Blaster (EBE 250 VHC)
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Model EBE 250 VHC is specifically designed to work on vertical surfaces. The blast head is supported by a forklift with and is operated from a tethered hand held control panel allowing separation of worker from potential hazards. Principle of operation similar to that of TMS #1851, Centrifugal Shot Blast System.

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<b>Point of Contact</b>	Boudreaux, Paul
<b>Role</b>	Vendor
<b>Affiliation</b>	Pegasus International, Inc
<b>Phone</b>	412-845-2839

<b>Title</b>	Wachs Wheel Cutter
<b>Data Source</b>	FIU LSDDP TIS
<b>Description</b>	This technology is used for cold cutting of contaminated pipe work and vessels. It utilizes a simple split frame assembly weighing approximately 250 lbs to attach the pipe saw to the OD of the component being cut and can be operated remotely from a pendant. The tool can be set up and deployed by a single operator with occasional assistance in 10 to 15 minutes using a hoist, some complex geometry applications may require an additional operator for initial set up. Once the tool is set up around a pipe the effort required to move the tool between cuts along the pipe length is minimal. (One operator and approximately ten minutes). The tool is powered hydraulically requiring 1500 psi and up to 15 gpm for maximum cutting speed. It would be deployed in environments where the fume from hot cutting techniques and associated airborne contamination would present a significant hazard.
<b>Point of Contact</b>	Beck, Tom
<b>Role</b>	Vendor
<b>Affiliation</b>	
<b>Phone</b>	847-537-8800

<b>Title</b>	Waste Assay Systems
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Canberra offers an assortment of assay systems to measure containers ranging from small canisters to drums and large crates. These systems include neutron-, gamma-, and integrated neutron/gamma-based systems intended to inventory waste and classify waste for disposal as TRU, LLW, or free release.
<b>Point of Contact</b>	Smalling, John
<b>Role</b>	Vendor
<b>Affiliation</b>	Canberra Industries, Inc.
<b>Phone</b>	800-243-3955

<b>Title</b>	Waste Mover
<b>Data Source</b>	FIU LSDDP TIS
<b>Description</b>	The waste mover is a software program that tracks fissile inventory in the process and facilitates automatic selection of TRUPACT loads such that payload criteria are not violated.

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<b>Point of Contact</b>	Lucero, Randy
<b>Role</b>	Vendor
<b>Affiliation</b>	BNFL Instruments Inc.
<b>Phone</b>	505-662-4192

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<b>Title</b>	Water Works SP-400 Superabsorbent
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	No description available.
<b>Point of Contact</b>	
<b>Role</b>	
<b>Affiliation</b>	Water Works Amercia, Inc
<b>Phone</b>	440-526-4815

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<b>Title</b>	Wireless Remote Monitor-Plus
<b>Data Source</b>	D&D Tech. Notebook
<b>Description</b>	Model WRM-Plus for enhanced wireless monitoring for real-time output of electronic dosimeters. Multiple access, one-way communication system for monitoring up to 64 portable remote transmitters (coupled to dosimeters, CAMs, RAM IONs). The single base receiver can be placed and monitored from a remote observation point at a distance of up to 3000 feet line of site. Includes Pentium laptop with telemetry software for interfacing with the receiver.
<b>Point of Contact</b>	
<b>Role</b>	
<b>Affiliation</b>	MGP Instruments
<b>Phone</b>	770-432-2744

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**DEMONSTRATED OST TECHNOLOGIES WITH  
PUBLISHED ITSRS**

**APPENDIX G**

## Appendix G

### Demonstrated OST Technologies with Published ITSR's

The following list of Innovative Technology Summary Reports (ITSRs) represents those reports available as of the publication of this document. Unless noted, all ITSRs are available from the OST homepage at <http://ost.em.doe.gov/efd/ost/pubs.htm>.

Technology Title	OST No.	DOE/EM Publication No.
<b>Deactivation and Decommissioning Focus Area</b>		
2-D Linear Motion System	1476 <sup>#</sup>	0403
Advanced Recyclable Media System	1971	0388
Airborne Laser Induced Fluorescence Imaging	78 <sup>#</sup>	0427
Centrifugal Shot Blast System	1851 <sup>*</sup>	0346, 0441
Compact Subsurface Soil Investigation System	2153 <sup>#</sup>	0412
Concrete Dust Suppression System	2154	0411
Concrete Grinder	2102	0374
Concrete Shaver	1950	0397
Concrete Spaller	2152	0398
Dual Arm Work Platform Teleoperated Robotics System	1787	0389
EMPORE Membrane Separation Technology	1543	0505
Excel Automatic Locking Scaffold	2320	0482
Field Transportable Beta Spectrometer	1853	0399
FRHAM-TEX Cool Suit	1854	0353
Gamma Cam (TM) Radiation Imaging System	1840	0345
Gamma Ray Imaging System	1793	0390
Global Positioning Radiometric Scanner System	2954	draft
Heat Stress Monitoring System	1953	0391
High Speed Clamshell Pipe Cutter	1807	0375
In Situ Object Counting System	2098	0477
Indoor Radiation Mapping Using Laser Assisted Ranging and Data System	1946	0407
Lead Paint Analyzer	2317	0481
Lead TechXtract Chemical Decontamination	1450 <sup>#</sup>	0454
Liquid Nitrogen-Cooled Diamond-Wire Concrete Cutting	2107 <sup>#</sup>	0392
Long Range Alpha Detection for Component Monitoring	2382	0497
Low-Density Cellular Concrete Void Filling	1846	0458
Mobile Automated Characterization System	1798	0413
Mobile Integrated Temporary Utility System	1795	0400
Mobile Work Platform	2243 <sup>#</sup>	0450
NuFab Anti Contamination Suit	1855	0354
Oxy-Gasoline Torch	1847	0401
Personal Ice Cooling System (PICS)	1898	0393
Pipe Explorer Surveying System	74	0440
Piping Inspection Using the BTX-II	1811	0426
Piping Inspection Using the Pipe Crawler	1810 <sup>*</sup>	0425, 0355
Portable X-Ray Fluorescence Spectrometer	1790	0402
Reactor Surface Contamination Stabilization	1839 <sup>#</sup>	0428
Remote Control Concrete Demolition System	2100	0410
Remote Underwater Characterization System (RUCS)	2151	0457
Remotely Operated Scabbling	2099	0467
RESRAD-Build	2103 <sup>#</sup>	0417
ROSIE - Mobile Robot Worksystem	1799	0429
Rotary Peening with Captive Shot	1812	0344
ROTO PEEN Scaler and VAC PAC System	1943	0343
Sealed-Seam Sack Suit	1954	0377
Self-Contained Pipe Cutting Shear	1948 <sup>#</sup>	0394
Soft Media Blast Cleaning	1899	0463
Soft-Sided Waste Containers	2240	0445
Steam Vacuum Cleaning	1780	0416

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**Demonstrated OST Technologies with Published ITSR's**

Technology Title	OST No.	DOE/EM Publication No.
Surface Contamination Monitor and Survey Information Management System	1942 <sup>*</sup>	0347, 0433
Swing-Reduced Crane Control	1815	0475
System for Tracking Remediation, Exposure, Activities and Materials	1947	0367
Urethane Foam Void Filling	1816	0395
VecLoader HEPA Vacuum Insulation Removal	1784	0469
Wireless Remote Radiation Monitoring System (WRRMS)	2104 <sup>#</sup>	0432
<b>Other OST Programs</b>		
Advanced Worker Protection System	75	
BetaScint (TM) Fiber-Optic Sensor for Detecting Sr-90 and U-238 in Soil	70	
Confined Sluicing End Effector	812	0372
Houdini-II Remotely Operated Vehicle System	98, 2085	0495
Light Duty Utility Arm	85	0406
Polyethylene Macroencapsulation	30	
TRUEX/SREX	347	0419

<sup>#</sup> ITSR that is not currently available on the OST publication web site

<sup>\*</sup> Technology with two ITSRs available representing demonstrations for different applications at separate sites